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Complaint No. 266/2026

COMPLAINT

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**COLLECTIVE COMPLAINT INCLUDING REQUEST FOR IMMEDIATE MEASURES AND PRIORITY
EXAMINATION**

ClientEarth v. Belgium

7 July 2026

Violation of the right to protection of health under Article 11 of the European Social Charter
in relation to PFAS pollution and exposure in Belgium

URGENT - requests for immediate measures and priority examination

Beijing Berlin Brussels London Los Angeles Luxembourg Madrid Warsaw

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List of Acronyms and Abbreviations

1. EU and international frameworks

CRC - Convention on the Rights of the Child
DWD - Drinking Water Directive (EU)
EC - European Commission
ECHA - European Chemicals Agency
ECHR - European Convention on Human Rights
EEA - European Economic Area
EFSA - European Food Safety Authority
GBF - Kunming-Montreal Global Biodiversity Framework
IED - Industrial Emissions Directive (EU)
IARC - International Agency for Research on Cancer
NASEM - National Academies of Sciences, Engineering, and Medicine
OECD - Organisation for Economic Co-operation and Development
REACH – Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (EU)
US EPA - United States Environmental Protection Agency
WHO – World Health Organization

2. Belgian institutions and regional authorities

AFSCA / FASFC - Federal Agency for the Safety of the Food Chain
Bruxelles Environnement – Brussels Regional Environment Agency
CHU Liège - University Hospital of Liège (Toxicology Lab)
CSI - *Conseil Scientifique Indépendant*. (established by the Walloon Government on 22 November 2023)
FPS Economy - Federal Public Service (i.e. federal ministry for) Economy
FPS HFSE - Federal Public Service (i.e. federal ministry for) Health, Food Chain Safety and Environment
ISSeP - Scientific Institute of Public Service (Wallonia)
OVAM - Flemish Waste Agency
Public Health Institute (Sciensano) - Belgian Federal Institute for Public Health

SPW - Service Public de Wallonie (i.e. regional ministry)
SWDE - La société wallonne des eaux (i.e. the Walloon water utility)
VITO - Flemish Institute for Technological Research
VIVAQUA - Public water utility, primarily for Brussels
VMM - Flemish Environment Agency
RTBF - Belgian French-speaking public broadcaster
SSMG - Belgian Scientific Society of General Medicine

3. PFAS-related programmes/monitoring/studies

BFRISK - Flemish flame retardant exposure study (includes PFAS data)
CARIBOUH - Walloon sewage sludge PFAS monitoring project
FLEHS - Flemish Environment and Health Study
CSI - Independent Scientific Council (Wallonia)

4. Health/exposure concepts

HBM - Human Biomonitoring
HBM-I - level below which no adverse effects are expected
HBM-II - level indicating increased risk and need for action

5. Chemical substances (PFAS and related)

HFPO-DA (GenX) - Hexafluoropropylene oxide dimer acid
PFAS - Per- and Polyfluoroalkyl substances
PFAA - Perfluoroalkyl acids
PFBA - Perfluorobutanoic acid
PFDA - Perfluorodecanoic acid
PFHpA - Perfluoroheptanoic acid
PFHxS - Perfluorohexane sulfonic acid
PFNA - Perfluorononanoic acid
PFOA - Perfluorooctanoic acid
PFOS - Perfluorooctane sulfonic acid
PFUdA - Perfluoroundecanoic acid
POPs - Persistent Organic Pollutants

SVHC - Substances of Very High Concern

TFA - Trifluoroacetic acid

C8 - legacy long-chain PFAS group (PFOS/PFOA-related)

6. Industrial/technical terms

HVACR - Heating, Ventilation, Air Conditioning and Refrigeration

TULAC - Textile, Upholstery, Leather, Apparel and Carpets sector

7. Fundamental rights standards

Charter - European Social Charter

Committee - European Committee of Social Rights

Protocol - Additional Protocol to the European Social Charter Providing for a System of Collective Complaints

Revised Charter - Revised European Social Charter

UN - United Nations (general reference in international law context)

Introduction

1. ClientEarth submits this collective complaint (hereinafter “the complaint” or “this complaint”) under the Additional Protocol to the European Social Charter Providing for a System of Collective Complaints (hereinafter “the Protocol”). ClientEarth contends that Belgium is in breach of Article 11 of the Revised European Social Charter (hereinafter “the Charter”) on account of its failure to protect its population from the serious health impacts associated with exposure to Per- and polyfluoroalkyl substances (PFAS) pollution and to provide appropriate health education and information on the health risks associated with PFAS.
2. Following a summary of the collective complaint, the complaint deals in turn with: submissions on admissibility (Part I), the particular characteristics of PFAS and the serious conditions and diseases to which they can give rise (Part II); the extent of the penetration of PFAS in Belgium, the limited nature of the response to this problem, and the resulting damage to the health of its population (Part III); the requirements arising under Article 11 of the Charter to tackle the impact of PFAS (Part IV); submissions as to the failure of Belgium to fulfil these requirements (Part V); and submissions regarding the consideration of the complaint and the measures needed to address the violation of Article 11 of the Charter (Part VI).
3. The complaint is supported by annexed documentation, including scientific reports, legal analyses and relevant national and international materials, which are referenced throughout the submission. Each category of supporting documentation is organised in annexes and referred to in the relevant sections which follow.

Summary of the Complaint

4. In this collective complaint, ClientEarth submits that Belgium has violated Article 11(1) and (3) of the Revised European Social Charter (the Charter) due to its failure to protect its population from the serious health impacts associated with exposure to Per- and polyfluoroalkyl substances (PFAS) pollution. Additionally, ClientEarth submits that Belgium is in violation of Article 11(2) of the Charter, because it has failed to provide appropriate health education and information on the health risks associated with PFAS.

Part I – Admissibility

5. Belgium ratified the Charter on 16 October 1990 and the Revised Charter on 2 March 2004. It entered into force in respect of Belgium in 2004. At the time of ratification, Belgium deposited a declaration to the effect that it considered itself bound by Article 11. Belgium has also ratified the collective complaints mechanism. ClientEarth has the right to submit this complaint by virtue of being included on the list established by the Governmental Committee for the purpose of submitting complaints alleging unsatisfactory application of the Charter for the period from 1 July 2023 to 30 June 2027.¹ ClientEarth also meets the requirement of having particular competence in respect of the subject-matter of this complaint.

Part II – The nature and impact of PFAS

¹ List of International Non-Governmental Organisations (INGOs) Entitled to Submit Collective Complaints [SECRETARIAT GENERAL \(coe.int\)](https://www.coe.int/en/web/secretariat-general)

6. PFAS are a large class of synthetic chemicals characterised by extreme persistence, mobility, and bioaccumulation (that is, they build up in living organisms over time). Widely used across industrial processes, consumer products, and agriculture, PFAS have become ubiquitous environmental contaminants, now detected in air, water, soil, wildlife, plants, and in the bodies of virtually the entire global population. They are released throughout their lifecycle, from production to disposal.
7. Their defining property – the strength of the carbon–fluorine bond – renders them highly resistant to degradation. As a result, PFAS accumulate over time, creating long-lasting and irreversible contamination.
8. A core finding of recent research is that PFAS contamination has already exceeded a safe operating space for humanity, meaning global PFAS levels in the environment are now so high, widespread, and irreversible that they breach a planetary boundary for chemical pollution.²
9. Human exposure to PFAS is cumulative, occurring through multiple pathways including food, water, air, and everyday consumer products. There are currently no established medical treatments capable of removing PFAS from the human body, making prevention of exposure the only reliable risk management approach.
10. A substantial and growing body of scientific evidence links PFAS exposure to serious and wide-ranging health effects. These include immune system suppression (notably reduced vaccine response), increased risk of certain cancers (including kidney and testicular cancer), reproductive harm, endocrine and metabolic disruption, and liver and kidney toxicity. Critically, evidence suggests that adverse effects occur even at very low exposure levels, and that mixtures of PFAS may produce compounded or amplified toxicity.
11. Children are particularly vulnerable to PFAS risks. Exposure begins before birth and continues throughout the crucial years of early development. PFAS exposure in children has been associated with increased risks of developmental impairments, immune dysfunction, metabolic disorders, and certain cancers. Early-life exposure may also shape health outcomes across a person's lifespan.
12. Scientific understanding of PFAS risk is rapidly evolving, but key uncertainties remain, particularly regarding the combined effects of multiple substances and long-term, intergenerational impacts. The absence of complete certainty does not diminish the strength of the existing evidence, which consistently demonstrates significant hazards and population-level health risks.

Part III – PFAS pollution and exposure across Belgium and the response to it

Presence of PFAS in Belgium

13. There is widespread and severe PFAS contamination in Belgium, driven by a combination of historical industrial production, ongoing industrial use, presence in consumer products, and waste management practices. In 2024, 3M, the country's major producer, ceased domestic PFAS production. Yet the overall use of PFAS remains high due to continued imports exceeding 8,000 tonnes annually, particularly in sectors such

² Cousins IT, Johansson JH, Salter ME, Sha B, Scheringer M. Outside the Safe Operating Space of a New Planetary Boundary for Per- and Polyfluoroalkyl Substances (PFAS). *Environ Sci Technol*. 2022 Aug 16;56(16):11172-11179. doi: 10.1021/acs.est.2c02765. Epub 2022 Aug 2. PMID: 35916421; PMCID: PMC9387091.

as medical devices, textiles and heating, ventilation, air conditioning, and refrigeration (HVAC) systems.³

14. PFAS pollution is pervasive across all three Belgian regions (Flanders, Wallonia and Brussels), affecting all elements of the environment: soil, groundwater, surface water, air, and the food chain. Contamination is especially serious near “hotspots”, places where the concentration of PFAS detected in water is considered hazardous for health (over 100 ng/L). These are typically sites of historic PFAS production, sites where PFAS are used in manufacturing industrial processes, areas used for fire-training purposes, landfills, and incinerators. Nevertheless, monitoring data show that contamination is widespread beyond such sites. Agricultural land is also affected.
15. The Belgian authorities acknowledge the extensive presence of PFAS, with thousands of confirmed or potential contamination sites identified nationwide.⁴ The persistence and mobility of PFAS compounds mean they accumulate in the environment and human bodies over time.
16. The financial implications are substantial. Estimated clean-up costs range from €2.5 billion to €40 billion over 20 years,⁵ while total societal costs, including health impacts, monitoring, and remediation, are estimated at €3.8 billion annually (approximately 0.7% of GDP).⁶ Health-related impacts, including premature mortality, represent the largest share of these costs.⁷

Government response

17. Despite this widespread and serious contamination, the responses of the Belgian authorities have been marked by prolonged and unjustified delays, inadequate risk mitigation, failures to prevent or effectively reduce PFAS emissions, and failures to put in place adequate health measures and provide information on health risks.
18. The PFAS-PFOS Inquiry Committee’s (hereinafter “the Flemish Parliamentary Inquiry Commission”) report from 2021 established that the authorities had long been aware of the risks associated with PFAS but failed to act,⁸ reflecting systemic governance failures.
19. From the early 2000s – when PFAS contamination at the 3M production site in Zwijndrecht was first identified – until 2021, the Belgian authorities largely limited their

³ The Brussels Times, “Belgium still imports 8,000 tonnes of PFAS per year”: [Belgium still imports 8,000 tonnes of PFAS per year](#).

⁴ Belgium’s 2026 submissions to the thematic report on forever chemicals and human rights by the United Nations Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes [OHCHR | Call for Input - Forever Chemicals \(PFAS\) & Human Rights](#)

⁵ Investigative news report presenting findings from the *Forever Pollution Project*: <https://www.rtb.be/article/enquete-100-milliards-d-euros-par-an-a-perpetuite-pour-decontaminer-l-europe-de-tous-les-pfas-11485508> (in French).

⁶ Federal Public Service (federal ministry) Health, Food Chain Safety and Environment (Belgium), *Financing mechanism for PFAS contamination – Final report (2026)* [Mécanisme de financement - pollution aux PFAS - rapport 2026 | SPF Santé publique](#) (report only in Dutch).

⁷ Federal Public Service (federal ministry) Health, Food Chain Safety and Environment (Belgium), *Financing mechanism for PFAS contamination – Final report (2026)* [Mécanisme de financement - pollution aux PFAS - rapport 2026 | SPF Santé publique](#) (report only in Dutch).

⁸ Final Report of the Flemish Parliamentary Inquiry Commission, 2021 “Vergadering Onderzoekscommissie PFAS-PFOS, Hoorzitting met 3M Belgium, vrijdag 3 september 2021”. [8 feb 2022 Tijdlijn PFOS-problematiek](#)

actions to monitoring and research. Despite clear scientific evidence of environmental contamination and human exposure, no effective preventive or protective measures were implemented, nor was information provided to the public. Very few environmental standards existed, and enforcement was weak, as illustrated by minimal penalties for ongoing pollution.

20. In 2021, a public scandal triggered by the elevated level of PFAS in soil samples around the 3M production site in Zwijndrecht marked a turning point, exposing decades of inaction and prompting public, political, and legal scrutiny.
21. Since 2021, responses have increased but remain inadequate:
 - At the **federal level**, action has been minimal and largely limited to research and transition projects⁹ and support for EU-level restrictions that are yet to be adopted.¹⁰ Proposed bans and funding mechanisms have stalled, and no measures to reduce or prevent emissions at source have been introduced.
 - In **Flanders**, the authorities introduced health advisories, biomonitoring, pollution mapping, and a €571 million remediation agreement with 3M. However, implementation has been slow and incomplete, with key remediation measures delayed.¹¹ The Flemish PFAS action plan lacks binding targets, enforcement mechanisms, and a clear financing model. Efforts remain largely focused on hotspots, particularly the 3M site, with insufficient attention to widespread, diffuse pollution.
 - In **Wallonia**, action was delayed until media investigations in 2023 forced public acknowledgment of contamination. Measures have focused on monitoring, water filtration and risk management at specific hotspots. Wallonia's PFAS action plan is not enforceable, lacking timelines, financing, and binding obligations enabling effective risk reduction.
 - In **Brussels**, there is no PFAS action plan. No biomonitoring has been conducted. There are some measures, including mandatory soil testing in certain cases, site investigations, and improved public information tools. However, responses remain reactive, and even those measures designed to address cases of significant contamination (notably at the so-called Sicli site) are insufficient.
22. Across all three regions, common shortcomings persist: delayed responses, reliance on further studies rather than concrete action, a lack of binding obligations, insufficient public communication, and a failure to put in place long-term strategies to reduce present and future emissions adequately or address widespread contamination.
23. Legal challenges, civil society mobilisation, and court rulings have increasingly highlighted these failures, while affected communities continue to report uncertainty,

⁹ Government programme describing circular economy investment initiatives <https://economie.fgov.be/en/themes/enterprises/calls-projects/belgium-builds-back-circular-3>; Report outlining the proposed financing mechanism for addressing PFAS pollution in Belgium [Study analysing the presence and impact of PFAS within Belgian industry and markets https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf](https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf)

¹⁰ The Brussels Times, "Belgium supports EU-wide ban on chemical linked to pollution scandal" [Belgium supports EU-wide ban on chemical linked to pollution scandal](#).

¹¹ Municipal information page: <https://www.gemeentebkz.be/pfas-zwijndrecht> (in Dutch).

exposure risks, and lack of protection. This section of the complaint also features several testimonials detailing the lived experiences of people affected by PFAS pollution in Belgium.

Human exposure to PFAS in Belgium

24. Meanwhile, biomonitoring evidence shows that PFAS exposure is widespread and significant across the Belgian population. Biomonitoring studies – conducted in Flanders and, to a lesser extent, in Wallonia – consistently detect PFAS in human blood samples, confirming near-universal exposure. While particularly high levels of PFAS are observed around hotspots, it is also present among individuals not living near known contamination sources.
25. Belgium lacks a comprehensive framework for biomonitoring and there are no legally binding threshold values for PFAS in the human body. Instead, authorities rely on non-binding international reference values to interpret results. Monitoring efforts have been fragmented, with no systematic programme in Brussels and incomplete coverage across the three regions, particularly for children and other vulnerable populations.
26. Findings from the Flemish Environment and Health Study (FLEHS), conducted since 2002, demonstrate that PFAS exposure has been present across all population groups for over two decades. PFAS have been consistently detected in 100% of sampled individuals in several studies, including adolescents and adults, with many exceeding health-based guidance values. Evidence shows exposure beginning in utero and continuing through breastfeeding. While some legacy PFAS levels (e.g. PFOA, PFOS) have declined, overall exposure remains high due to the persistence of these substances in the environment and increasing presence of replacement PFAS (e.g. TFA, HFPO-DA/GenX).
27. Children are particularly affected, yet monitoring remains uneven and incomplete. Available studies confirm that children in Belgium are widely exposed, often at higher levels than adults relative to body weight. However, systematic monitoring of children is lacking all across regions, and in some cases has depended on individual or community testing rather than efforts by public authorities.¹²
28. As stated above, existing evidence clearly links PFAS exposure to serious health risks, including cancer, immune dysfunction, hormonal disruption and developmental effects. Belgian authorities and scientific experts acknowledge these risks, but robust monitoring of health impacts is scant. Early findings from national studies on health impacts indicate associations between PFAS exposure and adverse health effects, particularly in adolescents.
29. Overall, biomonitoring and health surveillance systems remain insufficient to support effective public health protection and long-term risk management.

The legal framework applicable in Belgium

30. Belgium's legal framework for regulating PFAS is complex. It combines international commitments, European Union (EU) law, and domestic regulatory systems, and lacks

¹² Letter from the Flemish Department [https://res.cloudinary.com/deueykgii/image/upload/v1732543557/Zwijndrecht PFAS standpunt Departement Zorg regionaal georganiseerd bloedonderzoek bs40dg](https://res.cloudinary.com/deueykgii/image/upload/v1732543557/Zwijndrecht_PFAS_standpunt_Departement_Zorg_regionaal_georganiseerd_bloedonderzoek_bs40dg) (in Dutch).

binding legislation capable of addressing PFAS across their lifecycle and effectively preventing PFAS pollution at source.

31. Belgium is bound by several international treaties governing hazardous chemicals, including the Stockholm, Basel, and Rotterdam Conventions, which collectively address production, use and disposal. At the EU level, regulation remains piecemeal, addressing individual PFAS substances across different legislative instruments. A broad, EU-wide PFAS restriction proposal under the REACH Regulation is advancing slowly and is unlikely to be adopted before 2027–2028.
32. At the national level, responsibility for PFAS regulation is divided between the federal government and the three regions (Flanders, Wallonia, and Brussels), with some additional roles for the country's linguistic communities in health matters. The regions hold primary authority over environmental regulation (including permitting, soil, water, and air), while the federal government regulates product standards, food safety, and chemicals in consumer goods.
33. PFAS regulation varies significantly by sector:
 - **Water:** Regulation is split between federal (bottled water) and regional (public water supply) authorities. EU Standards in the EU Drinking Water Directive (100 ng/L for 20 PFAS) became binding in all regions in 2026. Limits for PFAS in groundwater and surface water remain largely absent.
 - **Soil:** Managed at regional level, Brussels has binding standards and operational tools, while Flanders and Wallonia rely mainly on non-binding guidance.
 - **Air:** Regulation is notably underdeveloped. No binding PFAS air quality standards or systematic monitoring exist in any region, representing a significant regulatory gap.
 - **Food and consumer products:** These are governed primarily at EU and federal level. Binding PFAS limits exist for certain foods, but gaps remain (e.g. milk). No national legislation specifically targets PFAS in consumer goods beyond EU requirements.
 - **Pesticides:** PFAS-containing pesticide products are authorised on a case-by-case basis, without general restrictions.
34. Monitoring responsibilities follow these divisions. While drinking water monitoring now includes PFAS following changes in EU law, gaps remain, particularly for surface and groundwater. Soil monitoring is largely reactive and only carried out in specific situations, with no general obligation in place. In the case of air, monitoring is almost entirely absent, as there are no binding standards or systematic programmes.
35. Monitoring of PFAS in food and consumer products at the federal level fails to address broader exposure pathways as it is limited to specific categories of products placed on the market, such as certain food items, and relies largely on sampling and operator self-monitoring.
36. Permitting systems regulate PFAS mainly through general permits rather than a dedicated framework. Facilities using or emitting PFAS must obtain permits, which may include emission limits, monitoring, or mitigation measures, often linked to broader EU

rules. However, these controls are site-specific, reactive, and fail to address the cumulative, long-term environmental presence of PFAS.

37. In practice, oversight is limited, with few inspections. Permits are granted or renewed despite known contamination and inadequate risk assessments. Belgium's reliance on permit-based regulation leads to fragmented and insufficient management of PFAS.

Part IV – Requirements under the Charter in light of other international standards

38. This section sets out the obligations arising under Article 11 of the Charter on the right to protection of health, as interpreted by the Committee and informed by the broader European and international human rights framework.
39. Article 11 of the Charter guarantees the right to protection of health. It requires States, as far as possible, to remove the causes of ill-health and prevent disease, and to provide advisory and educational facilities for the promotion of health. This right is grounded in human dignity, requiring States to safeguard both the physical and psychological integrity of individuals.
40. The Committee has consistently interpreted Article 11 of the Charter as encompassing the right to a healthy environment.¹³ This understanding is consistent with the recognition by the International Court of Justice in its Advisory Opinion on climate change that “a clean, healthy and sustainable environment is a precondition for the enjoyment of many human rights, such as the right to life, the right to health”.¹⁴
41. The Committee has also recognised that Article 11 requires the State to take measures designed to remove the causes of ill-health resulting from environmental pollution.¹⁵ This encompasses obligations to take proactive measures to protect health, requiring States to establish effective legal, policy and monitoring frameworks. While the Committee has recognised that addressing environmental harm may be complex and resource-intensive, it has nonetheless held that States must demonstrate measurable progress within a reasonable timeframe, using maximum available resources.
42. The precautionary principle is central to the protection of the right to health under the Charter: where credible scientific evidence indicates potential harm, States must act to prevent exposure, even without definitive proof of causation. International standards emphasise that exposure to hazardous substances is fundamentally incompatible with the right to health, and States must prioritise prevention over risk mitigation. PFAS have been identified by the UN Special Rapporteur on toxics as a key example where failures to adopt precautionary, class-based regulations demonstrate systemic shortcomings.¹⁶

Enhanced protection of children

43. Heightened obligations apply to vulnerable populations, particularly children. International human rights law, including the UN Convention on the Rights of the Child,

¹³ E.g., *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 195 and *European Roma Rights Centre (ERRC) v. Bulgaria*, decision on the merits, 3 December 2008, para. 47.

¹⁴ International Court of Justice, *Obligations of States in respect of Climate Change*, Advisory Opinion of 23 July 2025: [Advisory Opinion of 23 July 2025](#).

¹⁵ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para 202.

¹⁶ UN SR toxics: 2019 [A/74/480](#) States' duty to prevent exposure <https://www.ohchr.org/en/documents/thematic-reports/a74480-report-states-duty-prevent-exposure>, para. 62-65.

requires States to protect children from environmental hazards that may cause lifelong or intergenerational harm. Children are especially susceptible to toxic exposure, and States must adopt targeted, science-based measures to prevent and reduce risks affecting them.

Information and education

44. To comply with Article 11(2) of the Charter, States must ensure access to information and education on health risks, including those arising from environmental pollution. This includes proactive dissemination of reliable and accessible information. International standards, such as the Aarhus Convention (the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters), reinforce the obligation to provide timely and complete information, particularly in situations posing risks to human health, so individuals can take protective action.

Part V – Alleged violations of the right to protection of health under the Charter

45. The facts in this complaint amount to a systemic and long-standing failure by Belgium to comply with its obligations to protect health under Article 11(1), (2), and (3) of the Charter.
46. Belgium has failed to adopt and maintain a legal and policy framework capable of preventing PFAS pollution at source and of ensuring adequate protection of human health. The weakness of existing instruments and the absence of restrictive PFAS regulations have led to Belgium having the highest level of PFAS pollution in Europe.¹⁷
47. There is an emerging consensus in Europe that safer alternatives to PFAS exists, and that a total or near total ban of PFAS is the most effective way of preventing health risks. Yet Belgium, unlike other European states, has failed to deliver the level of legislative regulation necessary to prevent ongoing exposure at scale.
48. Instead, the Belgian authorities have approached the problem of PFAS pollution in a piecemeal, delayed, and overall ineffective manner. They have failed to establish measurable targets, demonstrate consistent progress, or ensure a verifiable reduction in PFAS exposure in affected populations.
49. There has been scant enforcement of existing rules, few inspections and almost no dissuasive sanctions. To the contrary, Belgium has actively allowed PFAS risks to accelerate through continued authorisation of PFAS-emitting activities and inadequate control of industrial pollution.
50. Belgium has not acted with due diligence, within a reasonable timeframe, nor with the effective use of available resources. It has failed to implement timely and effective precautionary measures in practice, including comprehensive monitoring, remediation, and public health responses.
51. Belgium's biomonitoring programmes have not been timely, nor have they been implemented across the whole national territory. Nor did Belgium act on the results of biomonitoring studies, which repeatedly and clearly raised concerns regarding PFAS exposure levels.

¹⁷ EURACTIV, "Belgium has highest levels of PFAS chemical pollution in Europe, study reveals" [Belgium has highest levels of PFAS chemical pollution in Europe, study reveals | Euractiv](#).

52. The absence of comprehensive remediation and clean-up strategies, with clear targets and timelines, demonstrates a failure to make the best possible use of available resources to address health risks.
53. Practical precautionary measures have been aimed at containment, rather than at eliminating exposure at source. In many cases, remediation is preceded by prolonged investigation processes, while companies are allowed to continue operations.
54. The State has relied extensively on individual behavioural measures to protect public health, rather than implementing collective, systemic solutions. Such behavioural measures place the burden of managing contamination on residents who lack the technical, financial or practical capacity to remediate PFAS pollution themselves.
55. This failure to remediate ongoing contamination not only prevents the restoration of a healthy environment but also perpetuates exposure of the population to potential serious, adverse health outcomes and related anxiety, contrary to the requirements of human dignity.
56. The multiple shortcomings of Belgium's responses are particularly acute for children, who are more susceptible to the long-term effects of PFAS exposure. The public health response is inadequate, and to the extent it exists, it only targets the general population. Belgium has failed to strike the balance Article 11 requires between the economic interests of society and the health of vulnerable individuals, especially children, pregnant women, and people living in PFAS hotspots.
57. Taken together, these failures amount to a structural failure to ensure the effective protection of the right to health and to a healthy environment, in violation of Article 11(1) and (3) of the Charter.
58. Belgium has also failed to fulfil its obligations under Article 11(2) of the Charter. By withholding critical information, delaying risk communication, providing incomplete or misleading guidance, failing to establish comprehensive monitoring systems and maintaining a fragmented and inconsistent regulatory landscape, Belgium has not ensured that individuals receive the education and information necessary to protect themselves from PFAS-related health risks. The failures identified are systemic, long-standing and continue to endanger the health of the entire Belgian population.

Part VI – Requests

59. Under Rule 36 of the Rules of the Committee, ClientEarth requests that the Committee indicate immediate measures to Belgium to avoid serious and irreparable harm arising from PFAS pollution, in particular to children, by preventing further exposure, ensuring monitoring, remediation, biomonitoring, medical follow-up, access to information, and access to uncontaminated drinking water and safe food.
60. Under Rule 26, ClientEarth requests priority examination given the gravity, urgency, systemic nature, and general importance of the complaint.
61. Under Rule 33(1), ClientEarth requests a hearing because the complaint raises complex scientific, technical, and legal questions concerning the application of Article 11 of the Charter to persistent chemical pollution.

Part I: Admissibility

62. ClientEarth submits that it has fulfilled the admissibility conditions set out in the Protocol and the Committee's Rules.
63. Belgium ratified the Charter on 16 October 1990 and the Revised Charter on 2 March 2004, and it entered into force in respect of Belgium on 1 May 2004. At the time of ratification, Belgium deposited a declaration that it considered itself bound by, inter alia, Article 11 of the Charter.
64. Belgium has also previously accepted the collective complaints procedure following its ratification of the Protocol on 23 June 2003, which entered into force in respect of Belgium on 1 August 2003.
65. The complaint is directed against the Belgian State as a whole. ClientEarth is conscious that Belgium is a federal entity. Many of the breaches alleged in the complaint are matters which, under domestic law, are the responsibility of the Brussels Capital Region (hereinafter "Brussels"), the Flemish Region (hereinafter "Flanders"), and the Walloon Region (hereinafter "Wallonia"), which have competence in respect of the environment.
66. As the Committee has pointed out:

even if under domestic law local or regional authorities ... are responsible for exercising a particular function, states party to the Charter are still responsible, under their international obligations to ensure that such responsibilities are properly exercised. ... ultimate responsibility for implementation of official policy lies with the ... state.¹⁸

As a result, irrespective of the internal division of competences, the Belgian State remains internationally responsible for ensuring compliance with the obligations under the Charter.

67. Insofar as the failure to prevent damage to health resulting from PFAS pollution may have begun before the Charter and the Protocol entered into force for Belgium, ClientEarth submits that there has been continuous and uninterrupted non-compliance with the requirements arising under Article 11, with the long-term effects only being felt after the entry into force of those instruments. As a result, as the Committee has found in *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*¹⁹ and *International Federation of Human Rights Leagues (FIDH) v. Greece*,²⁰ the breach of the obligation to prevent damage arising from PFAS pollution exists for as long as the pollution continues and may even be progressively compounded on account of no measures having been taken to put an end to it. Consequently, the Committee is competent to consider all the facts of the present complaint.
68. Furthermore, in accordance with Article 4 of the Protocol, this complaint is being submitted in writing and it concerns Article 11 of the Charter, a provision by which Belgium has been bound since 1 May 2004.
69. ClientEarth is an international non-governmental organisation which enjoys consultative status with the Council of Europe and has been included on the list established by the Governmental Committee for the purpose of submitting complaints alleging

¹⁸ *ERRC v. Greece*, Complaint No. 15/2003, Decision on merits of 8 December 2004, para. 29.

¹⁹ Complaint No.30/2005, Decision on the merits of 6 December 2006, para. 193.

²⁰ Complaint No. 72/2011, Decision on the merits of 23 January 2013, para. 48.

unsatisfactory application of the Charter for the period from 1 July 2023 to 30 June 2027.²¹

70. ClientEarth, through its sustained legal, advocacy and litigation work addressing the impact of environmental pollution on human health and the enjoyment of the right to health, has particular competence in respect of the matter in which it is submitting this complaint.²²

71. According to Article 4(2) of its Articles of Association,²³ ClientEarth's objective is:

to promote and encourage the enhancement, restoration, conservation and protection of the environment, including the protection of human health, for the public benefit

and, for this purpose, it has the power:

to do anything which is calculated to further its Objects or is conducive or incidental to doing so. In particular, ... to provide expert legal advice, assistance, and representation in connection with the management, administration, regulation, and protection of the environment, and the prudent and rational utilisation of land and other natural resources, including the development of policy or law, the drafting of laws, the implementation thereof, the institution of proceedings, conduct of litigation and resolution of disputes.²⁴

72. Pursuant to this object and these powers, ClientEarth has, for example, supported individuals in Belgium,²⁵ Germany,²⁶ Italy,²⁷ and Poland²⁸ to take legal action against their national governments to establish their right to healthy air; shared expertise with Spanish residents who successfully challenged a failure to take action against industrial livestock pollution that severely impacted their rights to health, clean water, and a healthy environment;²⁹ raised awareness about the hidden dangers of plastic-derived chemicals, shedding light on the toxic link between plastics and health;³⁰ promoted

²¹ List of International Non-Governmental Organisations (INGOs) Entitled to Submit Collective Complaints: [SECRETARIAT GENERAL \(coe.int\)](https://www.coe.int/t/e/secretariat-general/)

²² For ClientEarth's work on PFAS regulation, including the proposed EU-wide restriction under REACH, the application of the polluter-pays principle to PFAS contamination, and the organisation's analysis of relevant legislative and regulatory developments, see: ClientEarth, [Contribution of ClientEarth to the Public Consultation on the Proposal to Restrict PFAS under REACH \(2023\)](#); ClientEarth [Emission Control vs Restriction: Which best regulatory tool for effective PFAS risk prevention? \(2025\)](#); ClientEarth, [How to Apply the Polluter-Pays Principle to the PFAS Pollution Crisis? \(2026\)](#).

²³ Adopted by written special resolution on 25 April 2024.

²⁴ Article 5(1) and (2) of the Articles.

²⁵ ClientEarth. *Belgium has dirty air too – and its citizens are fighting for better*. [Belgium has dirty air too – and its citizens are fighting for better | ClientEarth](#).

²⁶ ClientEarth. *"I'm doing this for my children" – the Germans headed to court for cleaner air*. ["I'm doing this for my children" – the Germans headed to court for cleaner air | ClientEarth](#).

²⁷ ClientEarth. *Italy: Chiara joins EU parent's fight for healthy air*. [Italy: Chiara joins EU parents' fight for healthy air | ClientEarth](#).

²⁸ ClientEarth. *Warsaw smog appealed to Strasbourg*. [Warszawski smog zaskarżony do Strasburga | ClientEarth Prawnicy dla Ziemi](#) (in Polish).

²⁹ ClientEarth. *Court rules Spain breached residents' human rights in landmark case on livestock megapollution*. [Court rules Spain breached residents' human rights in landmark case on livestock megapollution | ClientEarth](#).

³⁰ ClientEarth. *Summit 2024 – Plastic and human health: the toxic link*. [Plastic and human health: the toxic link | ClientEarth](#).

access to healthy and sustainable food for present and future generations;³¹ and acted as a third-party intervener in *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*, a landmark climate case before the European Court of Human Rights.³²

73. In conformity with the Committee's current Rules of Procedure, the complaint is signed by ClientEarth's Chief Executive Officer, who is duly authorised to act on its behalf pursuant to its Articles of Association and internal governance rules (including a Delegated Authorities Policy). As required by those Rules, it is being submitted to the Executive Secretary of the Committee, acting on behalf of the Secretary General of the Council of Europe.

Part II: Statement of Facts – The Nature and Impacts of PFAS

74. This section sets out the nature and characteristics of PFAS, the approach followed for the purpose of measuring them, and the adverse impacts they have on a healthy environment and thus human health.

2.1 PFAS “forever chemicals”

75. The chemical family of PFAS was invented and developed in the United States in the 1930s. They are synthetic chemicals, which means they are man-made and do not occur in nature.
76. The most broadly accepted scientific definition of PFAS and the one taken up by the European Union (EU) was set out by the Organisation for Economic Co-operation and Development (OECD) as:

fluorinated substances that contain at least one fully fluorinated methyl or methylene carbon atom (without any H/Cl/Br/I atom attached to it), i.e. with a few noted exceptions, any chemical with at least a perfluorinated methyl group (–CF₃) or a perfluorinated methylene group (–CF₂–) is a PFAS.³³

77. Recent estimates suggest that PFAS cover over 14,000 individual chemical substances; this number is likely an underestimate.³⁴ PFAS are generally categorised into the following three large groups:

³¹ ClientEarth. *Guaranteeing the access to healthy and sustainable food for present and future generations – Client Earth briefing*. [Guaranteeing the access to healthy and sustainable food for present and future generations | ClientEarth](#).

³² European Court of Human Rights, *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* [GC], no. 53600/20, judgment of 9 April 2024: [VEREIN KLIMASENIORINNEN SCHWEIZ AND OTHERS v. SWITZERLAND](#).

³³ OECD, Environment directorate chemicals and biotechnology committee. *Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance Series on Risk Management No.61*. Available at: [Reconciling Terminology of the Universe of Per- and Polyfluoroalkyl Substances: Recommendations and Practical Guidance Series on Risk Management No.61](#) (OECD, July 2021).

³⁴ Jamie C. DeWitt, Juliane Glüge, Ian T. Cousins, Gretta Goldenman, Dorte Herzke, Rainer Lohmann, Mark Miller, Carla A. Ng, Sharyle Patton, Xenia Trier, Lena Vierke, Zhanyun Wang, Sam Adu-Kumi, Simona Balan, Andreas M. Buser, Tony Fletcher, Line Småstuen Haug, Audun Heggelund, Jun Huang,

- 1) **Perfluoroalkyl Acids (PFAA):** These are the most often reported and discussed group of PFAS. Traditionally, they are formed by long-chain compounds of at least six carbon atoms. The most well-known are Perfluorooctane Sulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA), also known as C8.³⁵ Recently, long-chain PFAS compounds have been replaced by short-chain and ultra-short-chain compounds constituted, respectively, of four to six carbon atoms (for example, PFHxA).³⁶
- 2) **Fluorinated gases (F-gases):**³⁷ These are a specific class of fluorinated chemicals. When released into the atmosphere, these gases can break down into other forms of shorter-chain PFAS, such as trifluoroacetic acid (TFA).³⁸ TFA is not only directly emitted from various manufacturing processes but also released into the air and water as a degradation product resulting from F-gases' wide application as refrigerants, fire extinguishing agents, and physical blowing agents,³⁹ as well as their applications in pharmaceuticals.⁴⁰
- 3) **Polymeric PFAS:** Also known as fluoropolymers,⁴¹ these PFAS are mainly used in consumer goods such as textiles, non-stick pans, electronics, and furniture, but they are also used in industrial production (e.g., in machinery, filters, lubricants, seals, and membranes).⁴²

78. Whichever class they belong to as chemicals, most PFAS share the following key characteristics:⁴³

Sarit Kaserzon, Juliana Leonel, Ishmail Sheriff, Ya-Li Shi, Sara Valsecchi, and Martin Scheringer. Environmental Science & Technology Letters 2024 11 (8), 786-797. DOI: 10.1021/acs.estlett.4c00147
Zürich II Statement on Per- and Polyfluoroalkyl Substances (PFASs): Scientific and Regulatory Needs, April 2024.

³⁵ Initially used to produce Teflon, the non-stick chemical coating.

³⁶ These include for example including trifluoroacetic acid (TFA), perfluoropropanoic acid (PFPrA), perfluorobutanoic acid (PFBA), trifluoromethanesulfonic acid (TFMS), perfluoroethanesulfonic acid, perfluoropropanesulfonic acid, and perfluorobutanesulfonic acid. See for more information: <https://www.sciencedirect.com/science/article/pii/S2772391723000221>.

³⁷ They constitute the largest proportion of PFAS by quantity and emissions in Europe and account for 63% of all PFAS emissions. For more information see: <https://meta.eeb.org/2024/05/29/f-gases-an-unprecedented-case-of-chemical-pollution/>.

³⁸ While TFA is a naturally occurring substance in the ocean, for example, the acid can also be produced by the breakdown of some HFCs or HFOs and some HCFCs (i.e. so-called "F-gases") in the atmosphere. It is highly soluble so can make its way easily into water and air. Specifically, it can be introduced into the water cycle through industrial processes and as a transformation product of pharmaceutical and agricultural products among others. (<https://www.fluorocarbons.org/environment/environmental-impact/tfa-as-an-atmospheric-breakdown-product/> [accessed 22 August 2024]).

³⁹ See '[Assessing the environmental occurrence of the anthropogenic contaminant trifluoroacetic acid \(TFA\)](#)' by F. Freeling and M.K. Björnsdotter (Current Opinion in Green and Sustainable Chemistry, Volume 41, June 2023)

⁴⁰ Simón E. López, José Salazar, Trifluoroacetic acid: Uses and recent applications in organic synthesis, Journal of Fluorine Chemistry, Volume 156, 2013, [Trifluoroacetic acid: Uses and recent applications in organic synthesis - ScienceDirect](#)

⁴¹ See [Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS? | Environmental Science & Technology](#)

⁴² European Environment Agency. *PFAS polymers in focus: supporting Europe's zero pollution, low-carbon and circular economy ambitions*. Published 29 April 2025 [EEA Briefing 04/2025, PFAS polymers in focus: supporting Europe's zero pollution, low-carbon and circular economy ambitions](#).

⁴³ ECHA. European Chemicals Agency. Substances per- et polyfluoroalkylées (PFAS). [Per- and polyfluoroalkyl substances \(PFAS\) - ECHA](#).

- 1) **Synthetic:** As human-made chemicals, they do not occur naturally in nature.
 - 2) **Persistent:** They all contain carbon-fluorine bonds, which are one of the strongest and most stable chemical bonds in organic chemistry. As a result of this durability, they do not break down naturally or do so only very slowly, and can remain in the environment for extended periods, with some persisting for centuries. Their extreme resistance to degradation has led to them often being referred to as “forever chemicals”.
 - 3) **Resistant:** They are highly resistant to heat, oil, water, and stains.
 - 4) **Mobile:** They travel easily through different media, including water, soil, and air, across long distances from their original source.
 - 5) **Bioaccumulative:** They build up in the environment and in living organisms over time. This results in cumulative concentrations within plants, animals, and humans, posing increasing impacts over time and across food chains.
79. PFAS are used in a variety of industrial and consumer products, including:⁴⁴
- **Consumer uses:** products containing PFAS include ski waxes, detergents, outdoor clothing, and other textiles such as carpets, plastic articles, cookware, food packaging, electronics, musical instruments, and personal care products, including cosmetics.⁴⁵ The textile industry constitutes one of the most extensive users of PFAS – a use that is expected to increase.⁴⁶
 - **Industrial applications:** PFAS are used as such or as technical aids, notably in the aerospace, automotive, construction and electronics industries. PFAS has been used for many years in significant quantities to make firefighting foams.⁴⁷
 - **Pesticides:** a 2024 US study reveals that about 14% of all active ingredients used in pesticides are considered to be PFAS, and this figure is only increasing: more than 30% of all pesticide ingredients approved during the last ten years have been PFAS.⁴⁸ In the European Union, 12% (37) of ingredients authorised for pesticide use are PFAS.⁴⁹ Experts suggest that pesticides are among the first sources of

⁴⁴ See Glüge and al (2020) “*An overview of the uses of per- and polyfluoroalkyl substances (PFAS)*”.

⁴⁵ PFAS are added to products such as nail polish, shaving cream, foundation, lipstick, and mascara in order to smooth the skin, or to make cosmetic products more durable, spreadable and water resistant.

⁴⁶ [Annex XV report](#) on the proposal for a universal PFAS restriction, p. 58.

⁴⁷ Filipovic, M., Woldegiorgis, A., Norström, K., Bibi, M., Lindberg, M., & Österås, A. H. (2015). Historical usage of aqueous film forming foam: A case study of the widespread distribution of perfluoroalkyl acids from a military airport to groundwater, lakes, soils and fish. *Chemosphere*, 129, 39-45.

⁴⁸ Donley N, Cox C, Bennet K, Temkin A.M., Andrews D. Q., Naidenko O. V. (2024). Forever Pesticides: A Growing Source of PFAS Contamination in the Environment, *Environmental Health Perspectives*, Volume 132, Issue 7.

⁴⁹ Pesticide Action Network Europe, *PFAS Pesticides in Europe: How active substances used in pesticides are contributing to PFAS contamination in food and water*, November 2023, <https://www.pan-europe.info/sites/pan-europe.info/files/public/resources/reports/PFAS%20Pesticides%20report%20November%202023.pdf> .

PFAS exposure for citizens, whether through residues in their food and water or via direct exposure, especially impacting farmers, farmworkers, and bystanders.⁵⁰

- A scientific understanding of the impacts of all PFAS, including novel PFAS,⁵¹ demonstrates the need to treat them as a family of chemicals and regulate them as a group rather than individually.⁵²

2.2 Approach to PFAS measurement

80. Understanding the potential harm posed by PFAS begins with understanding how widely present they are in a given environmental medium, whether water, air, or soil, and how those concentrations compare to recognised health or environment-based thresholds.
81. In practice, PFAS present specific complications. Because they comprise thousands of individual substances and because their behaviour varies across environmental media, locations and time, studies do not always use the same terminology or measurement approaches. As a result, PFAS concentrations and thresholds may be expressed in different ways (e.g., individual PFAS, sums of selected PFAS, or broader sum parameters), which is essential to understand when interpreting the scientific evidence on their adverse effects.
82. Current scientific evidence indicates no known safe threshold of exposure for many PFAS, particularly the most studied ones (PFOA, PFOS).⁵³ This means that even very low concentrations may be associated with adverse effects. The benchmarks set by expert bodies must be treated with caution, as they differ across jurisdictions, and they tend to evolve in light of advancing scientific understanding.
83. Measurements depend on whether PFAS are emitted into liquid, air, or solids (i.e. the “environmental media”),⁵⁴ and different measurement terminology may reference similar conditions (e.g. nanogrammes per litre (ng/l) vs ppt (parts per trillion) in liquid).

⁵⁰ Donley N, Cox C, Bennett K, Temkin AM, Andrews DQ, Naidenko OV. Forever Pesticides: A Growing Source of PFAS Contamination in the Environment. *Environ Health Perspect.* 2024 Jul;132(7):75003. doi: 10.1289/EHP13954. Epub 2024 Jul 24. PMID: 39046250; PMCID: PMC11268133.

⁵¹ The “classic” perfluorinated compounds, such as PFOS/PFOA, consist of a fully fluorinated alkyl chain with a functional group (e.g. sulphonate) at the end. The new PFAS can have other structures and, for example, be ether or cyclic molecules. Moreover, other substituted atoms such as chlorine may also be present. Not all replacement compounds are completely new; some have existed alongside PFOS and PFOA for a number of years, e.g. 6:2 Cl-PFESA (F53-B) has been manufactured in China for decades as a PFOS alternative. Novel PFAS compounds typically include ultra-short compounds including trifluoroacetic acid (TFA), perfluoropropionic acid (PFPrA), perfluoroethanesulphonic acid (PFETs) and perfluoropropanesulphonic acid (PFPrS).

⁵² Dr DeWitt’s report, p.36.

⁵³ Dr DeWitt, p. 15, Dr Grandjean, p. 90, Prof. dr. Boer, p. 5 and the references cited in those reports.

⁵⁴ See table below.

84. Moreover, thresholds for the purpose of regulation may refer to individual specific PFAS compounds,⁵⁵ a sum of specific compounds,⁵⁶ or total compounds.⁵⁷
85. As raised above, PFAS thresholds (i.e. a reference figure for when a particular concentration may be considered harmful) in relation to a given environmental medium are not universally accepted, nor do they exist for each of the many thousands of PFAS compounds. Where thresholds have been set, these may be legally binding (including those which are in force, yet to enter into force, or yet to be transposed into national law) or issued as voluntary guidance.
86. In addition, the determination of thresholds, whether nationally or internationally, will depend on factors such as evolving scientific knowledge, national or international political negotiation, legal drafting processes, and corporate lobbying.⁵⁸
87. The common PFAS environmental measurements referred to in this complaint are set out in the following table:⁵⁹

Media	Measurement	Description
Liquid	ng/L	nanogrammes per litre (a unit of concentration measuring the amount of substance in one litre of liquid, often water)
Liquid	ppt	parts per trillion (a unit of concentration meaning one part of a substance for every one trillion parts of the total mixture)
Note: 1 ng/L = 1 ppt		
Liquid	µg/L	microgramme per litre (a unit of concentration measuring the amount of a substance in one litre of liquid, often water)
Liquid	ppb	parts per billion (a unit of concentration meaning one part of a substance for every one billion parts of the total mixture)
Note: 1 µg/L = 1 ppb		
Air	ng/m ³	nanogrammes per cubic metre (a unit of concentration used to express the amount of a substance in a cubic metre of air)
Solids	µg/kg	microgrammes per kilogramme (a unit of concentration measuring the amount of a substance in one kilogramme of a material, such as soil or food)

⁵⁵ E.g. PFOA, PFOS or PFHxS. This approach treats each listed substance as a standalone regulated chemical with substance-specific limits

⁵⁶ Some frameworks regulate *the combined concentration of several named PFAS*, usually from a predefined list (for example: the sum of PFOS, PFOA, PFHxS, and PFNA). Thresholds apply to the aggregate level of only those specified compounds—not all PFAS.

⁵⁷ This approach assesses the *overall PFAS load*, referring either to the sum of all detectable PFAS measured analytically (e.g., via targeted or suspect screening) or to proxy methods estimating total organofluorine. This category does not rely on lists of specific PFAS but aims to capture the entire PFAS class as a whole.

⁵⁸ For example, in the United States, reports by Food & Water Watch show that chemical manufacturers and industry associations spent more than \$110 million on PFAS-related lobbying between 2019 and 2022, targeting dozens of federal bills and attempting to shape cleanup rules, liability standards, and regulatory thresholds. In the first half of 2025 alone, industry groups continued to spend over \$70 million lobbying the US EPA and the White House on PFAS issues. See [PFAS Lobbying: Mid-2025 Update, Food and Water Watch](#).

⁵⁹ This is based on [FAQ: PFAS Test Results - What Do the Numbers and Acronyms Mean?](#)

Note: 1 µg = 1000 ng, meaning micrograms are 1000 times larger than nanograms, so ng as a unit measures much smaller quantities, often used for trace contaminants, while µg indicates larger amounts, commonly seen in drinking water standards.

88. The table below summarises reference and guidance values for selected PFAS in human biomonitoring (i.e. testing on humans, usually through blood tests), as established by major health assessment authorities. These values are used to interpret internal exposure levels and guide public health actions.

Health assessment authority	Values
German Human Biomonitoring Commission (HBM)	Values for PFOS and PFOA
HBM I - Concentrations of a substance in human biological material below which, according to the current status of assessment, no adverse health effects are anticipated.	• PFOS= 5 µg/L • PFOA = 2 µg/L
HBM II - Concentrations of a substance in human biological material which, when exceeded, may lead to a health impairment that is considered as relevant to affected individuals. ⁶⁰	Women (fertile age) • PFOS = 10 µg/L • PFOA = 5 µg/L For all others • PFOS = 20 µg/L • PFOA = 10 µg/L
National Academies of Sciences (NASEM, a US NGO)	Values for 7 PFAS (PFOA, PFNA, PFDA, PFUdA, PFHxS, PFOS and MeFOSAA)
Concentrations in human biological material	• < 2 ng/mL (µg/L): no specific action required, • 2 – 20 ng/mL (µg/L): medical monitoring with particular attention to blood cholesterol levels, closer monitoring of pregnancy and the potential occurrence of breast cancer, • > 20 ng/mL (µg/L): increased level of monitoring, including follow-up of thyroid function, the appearance of ulcerative colitis and testicular or kidney cancers.
European Food Safety Authority (EFSA, an EU agency)	Value for the sum of PFOA, PFNA, PFHxS and PFOS
Blood PFAS concentration (sum of four PFAS) that	• PFOA + PFNA + PFHxS + PFOS = 6.9 µg/l

⁶⁰ As Dr DeWitt explains: “[t]he HBM-II values derived for PFOA and PFOS were based on a systematic and continued review of epidemiological and toxicological literature and the following adverse health effects formed the basis of the values: reduced birth weights and developmental toxicity, reduced fertility, immunotoxicity, increased cholesterol, and type II diabetes (HBM-C, 2020). Two sets of HBM-II values were calculated, one for women of child-bearing age and one for all other population subsets;” Annex A, pp. 38-39.

EFSA predicts would result from exposure at the Tolerable Weekly Intake (set by EFSA at 4.4 ng/kg bw/week). If this value is exceeded, this indicates that a person's internal PFAS burden is higher than what EFSA considers tolerable.	
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89. As there are no universal or static PFAS thresholds, PFAS measurements referenced in the complaint and described as “exceeding limits” or “above threshold levels” should be understood as reflecting scientific thinking at the time of the complaint. Thresholds are dynamic and based on the weight of scientific evidence at the time they are reached. As the science evolves, these thresholds are trending towards stricter regulation.⁶¹
90. Dr DeWitt, Professor of Environmental and Molecular Toxicology at Oregon State University and Director of the Pacific Northwest Center for Translational Environmental Health Research, is an internationally recognised PFAS toxicology expert with around two decades of research on the health effects of PFAS. She notes the lag between research and subsequent revisions in health guidelines. Dr DeWitt outlines the history of PFAS guidelines – which have become stricter over time in line with scientific knowledge and understanding – and emphasises that “[w]hile protective health guidelines are used to establish a level at which there is an acceptably low risk of adverse health effects, they should not be understood to reflect a chemical concentration at which there is *no* risk”.⁶² Her report also underlines that protective health guidelines are dynamic and based on the weight of scientific evidence at the time the guidelines are established. As previously mentioned, these protective health guidelines for PFAS have recognised potentially adverse outcomes at ever lower exposure levels as more information has become available.⁶³

2.3 The adverse impacts of PFAS on a healthy environment

91. Understanding the impacts of PFAS on the environment is necessary to understanding their impacts on the health of people.
92. PFAS behave fundamentally differently from ordinary pollutants because of their persistence:⁶⁴ once released into the environment, they remain there. They do not degrade; they accumulate in soil, water, and air, and they disperse globally. Even limited emissions, therefore, create long-lasting, widespread, increasing and irreversible contamination. PFAS compromise the integrity of natural resources, particularly water and soil, and create continuous exposure pathways for ecosystems and human populations.

⁶¹ Dr DeWitt, pp.43-44.

⁶² Dr DeWitt, p.44.

⁶³ Dr DeWitt, p.44.

⁶⁴ Wang ZY, DeWitt JC, Higgins CP and Cousins IT, A Never-Ending Story of Per- and Polyfluoroalkyl Substances (PFASs)?, Environ. Sci. Technol, 2017, 51, 2508–2518.

93. PFAS are emitted throughout their entire life-cycle, from production to the waste stage, as depicted in the figure below.⁶⁵



Figure The lifecycle of PFAS [EC, 2020]

Figure 1. Lifecycle of PFAS, reproduced from European Commission, Commission Staff Working Document: Poly- and perfluoroalkyl substances (PFAS), accompanying the Chemicals Strategy for Sustainability.

94. Around 850,000 tonnes of PFAS are used per year in substances and articles in the European Economic Area.⁶⁶ Out of this, 75,000 tons of PFAS per year are released into the environment during normal product use.⁶⁷ Beyond product use, the emissions from PFAS production and processing facilities are high: across Europe, the Forever Pollution Mapping project reports PFAS contamination in 23,000 locations. At over 2,300 “hotspots”, the concentration of PFAS detected is considered hazardous for health (over 100 ng/L).⁶⁸

⁶⁵ Emission of and exposure to PFAS during their lifecycle, Commission Staff Working Document: Poly- and perfluoroalkyl substances (PFAS) Accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Chemicals Strategy for Sustainability Towards a Toxic-Free Environment, SWD/2020/249 final.

⁶⁶ [Annex XV report](#) on the proposal for a universal PFAS restriction, pp. 43 and 44.

⁶⁷ [Ibid.https://echa.europa.eu/documents/10162/1c480180-ece9-1bdd-1eb8-0f3f8e7c0c49](https://echa.europa.eu/documents/10162/1c480180-ece9-1bdd-1eb8-0f3f8e7c0c49)

⁶⁸ Gary Dagorn, Raphaëlle Aubert, Stéphane Horel, Luc Martinon and Thomas Steffen. *Le Monde. Forever pollution': Explore the map of Europe's PFAS contamination*. Published 23 February 2023, Updated 2 December 2024. Available at: https://www.lemonde.fr/en/les-decodeurs/article/2023/02/23/forever-pollution-explore-the-map-of-europe-s-pfas-contamination_6016905_8.html.

95. PFAS are now found in all major environmental “compartments”: they enter surface water, rainwater, groundwater, soils, and the atmosphere, and are detected in wildlife and humans across the globe.
96. Research into adverse PFAS impacts on the environment has shown, in particular, the damage to:
- 1) **Soil:** Soils are long-term PFAS reservoirs due to extreme persistence. A 2025 analysis in *Science of the Total Environment* shows that PFAS contamination is widespread, driven by atmospheric deposition, irrigation, and industrial sources.⁶⁹ PFAS soil contamination has many consequences on our global ecosystems as it leads directly to plant uptake, food-chain transfer, and chronic exposure for wildlife and humans. PFAS levels in soil affect not only soil organisms but also plant health and ecosystem functioning as a whole.⁷⁰
 - 2) **Air:** PFAS enter the atmosphere during production, use, and waste handling.⁷¹ Once airborne, they travel long distances and deposit far from their source.⁷² For instance, air samples collected at the top of the 325-metre Amazon Tall Tower Observatory, situated in the middle of a rainforest around 150 kilometres from Manaus, Brazil, contained PFAS. PFAS in air samples at this height indicate that these PFAS have been transported long-range.⁷³
 - 3) **Water:** PFAS reach rivers and lakes through industrial discharge, runoff, wastewater effluent, and atmospheric deposits. A 2024 European Environment Agency report reveals widespread PFAS pollution in European waters, with levels often exceeding environmental quality standards.⁷⁴ Because they do not degrade, concentrations accumulate over time. The PFAS “TFA” poses a growing problem in particular due to its omnipresence in water bodies, ice cores, and drinking-water sources, including bottled water.⁷⁵ PFAS in surface waters affect aquatic organisms,⁷⁶ reduce water quality and create continuous exposure pathways for

⁶⁹ Srivastava, R. K., & Srivastava, S. (2025). *Mapping PFAS behavior via meta-analysis of soil dynamics, predictive modeling and policy integration*. *Science of The Total Environment*, 1000, 180399. <https://doi.org/10.1016/j.scitotenv.2025.180399>

⁷⁰ Wei M, Chen Z, Yang K, Cao L, Qiu C, Zhou L, Shi Z, Chen S. Global ecological and health risks of PFAS in surface soil. *Environ Int.* 2025 Dec;206:109925. doi: 10.1016/j.envint.2025.109925. Epub 2025 Nov 15. PMID: 41252938.

⁷¹ Harb, Y., El Hachem, C. A., Mcheik, A., El Zakhem Naous, G., & Hayeck, N. (2026). *The global atmospheric cycle of forever chemicals: a review of PFAS distribution, wet deposition, and atmospheric fate*. *Environmental Science: Atmospheres*. <https://doi.org/10.1039/D5EA00130G>.

⁷² D'Ambro EL et al. , Characterizing the Air Emissions, Transport, and Deposition of Per- and Polyfluoroalkyl Substances from a Fluoropolymer Manufacturing Facility. *Environmental Science & Technology* 55, 862–870 (2021).

⁷³ Ivan Kourtchev et. al. [Occurrence of a “forever chemical” in the atmosphere above pristine Amazon Forest, Science of The Total Environment Volume 944, 20 September 2024, 173918; Coventry University researcher finds ‘forever chemicals’ that can be harmful to people and wildlife in Amazon rainforest for the first time, Coventry University, 26 September 2024.](https://doi.org/10.1039/D5EA00130G)

⁷⁴ European Environment Agency, *PFAS Pollution in European waters*. Available at:<https://www.eea.europa.eu/en/analysis/publications/pfas-pollution-in-european-waters>.

⁷⁵ Arp HPH, Gredelj A, Glüge J, Scheringer M, Cousins IT. The Global Threat from the Irreversible Accumulation of Trifluoroacetic Acid (TFA). *Environ Sci Technol.* 2024 Nov 12;58(45):19925-19935. doi: 10.1021/acs.est.4c06189. Epub 2024 Oct 30. PMID: 39475534; PMCID: PMC11562725.

⁷⁶ Y. Li, Y. Xu, K. Scott, C. Lindh, T. Fletcher, Half-lives of PFOA, PFPeS, PFHxS, PFHpS and PFOS after end of exposure to contaminated drinking water, *Environ. Epidemiol.*, 3 (2019), p. 237.

wildlife and humans.⁷⁷ Moreover, PFAS migrate easily through soil into groundwater due to their mobility.⁷⁸ Groundwater used for drinking water is now contaminated in many regions.⁷⁹ Contamination persists for decades, making water resources difficult or impossible to restore.

- 4) **Plant uptake and the broader food chain:** Plants readily absorb PFAS from soil and water. Uptake leads to redistribution of PFAS into food webs, phytotoxic effects (reduced growth, impaired nutrient uptake, altered metabolism), weakened plant resilience, and disrupted nutrient cycles.⁸⁰ Importantly, plants act as vectors, moving PFAS through ecosystems and into the human diet: they redistribute PFAS into soil, water, and food webs and cause continuous dietary exposure. In Europe, the contamination of plants and soil, notably from PFAS-containing pesticides, is reflected in agricultural products: between 2011 and 2021, PFAS residues increased by 220% in fruit and 274% in vegetables.⁸¹
- 5) **Wildlife:** PFAS are found in fish, birds, mammals, and marine species worldwide.⁸² Wildlife exposure is linked to immune suppression, hepatotoxicity (liver damage),⁸³ reproductive impairment, developmental toxicity, and altered hormone function.⁸⁴ Because PFAS bioaccumulate in some species and are omnipresent in water and prey, wildlife face unavoidable exposure and risks of adverse health effects.⁸⁵

⁷⁷ Ackerman Grunfeld, D., Gilbert, D., Hou, J., Jones, A. M., Lee, M. J., Kibbey, T. C. G., & O'Carroll, D. M. (2024). *Underestimated burden of per- and polyfluoroalkyl substances in global surface waters and groundwaters*. *Nature Geoscience*, 17(4), 340–346. <https://doi.org/10.1038/s41561-024-01402-8>.

⁷⁸ M.B. Ahmed, M.A.H. Jahir, R. McLaughlan, N.L. Nguyen, B. Xu, D.L. Nghiem, Per- and polyfluoroalkyl substances in soil and sediments: occurrence, fate, remediation and future outlook *Sci. Total Environ.*, 748 (2020), Article 141251.

⁷⁹ Tokranov AK, Ransom KM, Bexfield LM, Lindsey BD, Watson E, Dupuy DI, Stackelberg PE, Fram MS, Voss SA, Kingsbury JA, Jurgens BC, Smalling KL, Bradley PM. Predictions of groundwater PFAS occurrence at drinking water supply depths in the United States. *Science*. 2024 Nov 15;386(6723):748-755. doi: 10.1126/science.adb6638. Epub 2024 Oct 24. PMID: 39446898.

⁸⁰ Olatunbosun Adu, Xingmao Ma, Virender K. Sharma, Bioavailability, phytotoxicity and plant uptake of per-and polyfluoroalkyl substances (PFAS): A review, *Journal of Hazardous Materials*, Volume 447, 2023, <https://doi.org/10.1016/j.jhazmat.2023.130805>.

⁸¹ PAN Europe, "Toxic Harvest: The rise of forever PFAS pesticides in fruit and vegetables in Europe", February 2024. <https://www.pan-europe.info/resources/reports/2024/02/toxic-harvest-rise-forever-pfas-pesticides-fruit-and-vegetables-europe>.

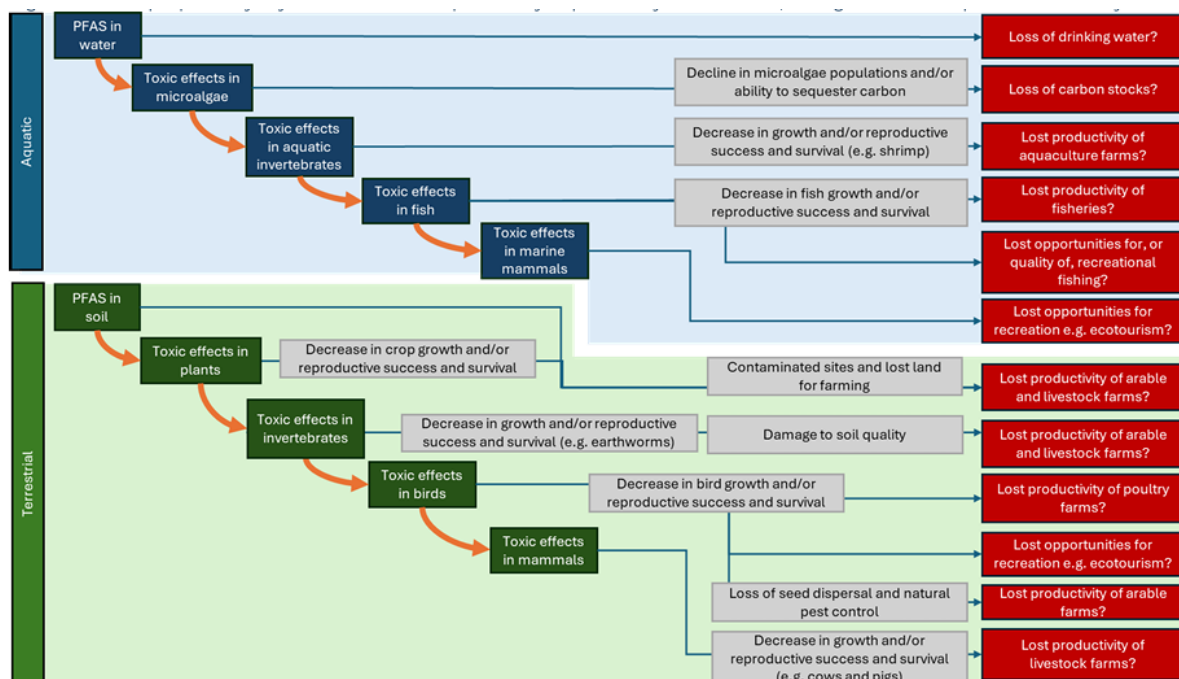
⁸² Giesy JP, Kannan K. Global distribution of perfluorooctane sulfonate in wildlife. *Environ Sci Technol*. 2001 Apr 1;35(7):1339-42. doi: 10.1021/es001834k. PMID: 11348064.

⁸³ Y. Wen, N. Mirji, J. Irudayaraj, Epigenetic toxicity of PFOA and GenX in HepG2 cells and their role in lipid metabolism, *Toxicol. Vitro.*, 65 (2020), Article 104797.

⁸⁴ Andrews DQ, Stoiber T, Temkin AM, Naidenko OV. Discussion. Has the human population become a sentinel for the adverse effects of PFAS contamination on wildlife health and endangered species? *Sci Total Environ*. 2023 Nov 25;901:165939. doi: 10.1016/j.scitotenv.2023.165939. Epub 2023 Sep 26. PMID: 37769722 ; see also : Bangma J, Guillelte TC, Bommarito PA, Ng C, Reiner JL, Lindstrom AB, Strynar MJ. Understanding the dynamics of physiological changes, protein expression, and PFAS in wildlife. *Environ Int*. 2022 Jan 15;159:107037. doi: 10.1016/j.envint.2021.107037. Epub 2021 Dec 9. PMID: 34896671; PMCID: PMC8802192.

⁸⁵ Peritore AF, Gugliandolo E, Cuzzocrea S, Crupi R, Britti D. Current Review of Increasing Animal Health Threat of Per- and Polyfluoroalkyl Substances (PFAS): Harms, Limitations, and Alternatives to Manage Their Toxicity. *Int J Mol Sci*. 2023 Jul 20;24(14):11707. doi: 10.3390/ijms241411707. PMID: 37511474; PMCID: PMC10380748.

97. At the ecosystem level, a 2026 European Commission report recognises that PFAS contamination compromises the quality of natural resources essential to a healthy environment.⁸⁶



This diagram visualises how PFAS exposure in water and soil could potentially lead to some ecosystem service effects (non-exhaustive). Exposure to different types of organisms, e.g. from algae to invertebrates, fish, birds, and mammals, could lead to different types of effects.

Figure 2. PFAS exposure in water and soil and its potential effects on ecosystem services (adapted from European Commission, *The Cost of PFAS Pollution for our Society*, p. 89).

98. Persistence is the core driver of the environmental harm caused by PFAS.⁸⁷ A 2026 article by PFAS experts Scheringer and Cousins⁸⁸ explains that persistent chemicals are a “poorly reversible, long-term source of exposure”, meaning that once they enter the environment, they continue to expose humans and ecosystems for decades or centuries. Persistence amplifies harm because it increases the duration of exposure and allows substances to accumulate, disperse globally, and interact with other stressors. According to these experts, society cannot control or remediate persistent chemicals once they are released. Even low-toxicity chemicals become a source of high-concern when they do not degrade.
99. These circumstances have led experts to warn that PFAS contamination may reach levels that could render natural resources such as soil and water unusable far into the future, resulting in long-term exposure and unavoidable harmful health effects.⁸⁹

⁸⁶ European Commission: Directorate-General for Environment, WSP, Ricardo and Trinomics, *The cost of PFAS pollution for our society – Final report*, Publications Office of the European Union, p. 5632026, <https://data.europa.eu/doi/10.2779/9590509>.

⁸⁷ Cousins IT, Ng CA, Wang ZY and Scheringer M, Why is high persistence alone a major cause of concern?, *Environ. Sci. Process. Impacts*, 2019, 21, 781–792.

⁸⁸ Scheringer M, Cousins IT. Is Persistence a Hazard? *Environ Sci Technol*. 2026 Apr 7;60(13):9718-9720. doi: 10.1021/acs.est.6c00770. Epub 2026 Mar 23. PMID: 41870369; PMCID: PMC13063408.

⁸⁹ Blomberg AJ, Shih YH, Messerlian C, Jørgensen LH, Weihe P, Grandjean P. Early-life associations between per- and polyfluoroalkyl substances and serum lipids in a longitudinal birth cohort. *Environ Res*.

100. There is currently no evidence that environmental concentrations of PFAS, and related exposure, could ever decline.⁹⁰ Even though the global emissions of a few regulated PFAS – including PFOS, PFOA and PFHxS⁹¹ – have declined in recent years, these substances continue to be found in high volumes in soil, sediment, sludge, and biota (i.e. all the living organisms in a particular environment), as well as in aquatic environments and in human bodies.⁹² Moreover, following the regulation of long-chain (C8) PFAS, non-regulated PFAS have been more extensively used as alternatives and can now be found in the environment in significant amounts.⁹³
101. A core finding of recent research is that PFAS contamination has already exceeded a safe operating space for humanity, meaning global PFAS levels in the environment are now so high, widespread, and irreversible that they constitute a breach of a planetary boundary for chemical pollution.⁹⁴
102. In short, PFAS pollution is not a localised environmental problem; it is a long-lasting, irreversible, and escalating worldwide threat.

2.4 The adverse impacts of PFAS on human health

103. Exposure to PFAS is the rule for the general population, not an exception. These persistent chemicals accumulate in the human body and are increasingly associated with significant health impacts across multiple systems. This section presents the evidence of their presence in humans and the harms they are connected to.

2.4.1 PFAS presence in human bodies

104. Understanding the health impacts of PFAS requires beginning with a critical fact: PFAS are already present in virtually everyone's bodies.
105. Awareness of the presence of PFAS in the human body started after the first occupational studies were conducted in the 1970s and found detections of some PFAS in the blood of workers.⁹⁵ The first academic study of PFAS in the US dates back to

2021 Sep;200:111400. doi: 10.1016/j.envres.2021.111400. Epub 2021 May 31. PMID: 34081971; PMCID: PMC8403652.

⁹⁰ Land, M.; de Wit, C. A.; Bignert, A.; Cousins, I. T.; Herzke, D.; Johansson, J. H.; Martin, J. W. [What Is the Effect of Phasing out Long-Chain per- and Polyfluoroalkyl Substances on the Concentrations of Perfluoroalkyl Acids and Their Precursors in the Environment?](#) A Systematic Review. *Environmental Evidence* 2018, 7(1), 4, DOI: 10.1186/s13750-017-0114-y.

⁹¹ Stockholm Convention on Persistent Organic Pollutants (POPs). *The new POPs under the Stockholm Convention*: <https://www.pops.int/TheConvention/ThePOPs/TheNewPOPs/tabid/2511/Default.aspx>.

⁹² Wee SY, Aris AZ. Environmental impacts, exposure pathways, and health effects of PFOA and PFOS. *Ecotoxicol Environ Saf*. 2023 Nov 15;267:115663. doi: 10.1016/j.ecoenv.2023.115663. Epub 2023 Nov 15. PMID: 37976959.

⁹³ Zhi Y, Lu X, Munoz G, Yeung LWY, De Silva AO, Hao S, He H, Jia Y, Higgins CP, Zhang C. Environmental Occurrence and Biotic Concentrations of Ultrashort-Chain Perfluoroalkyl Acids: Overlooked Global Organofluorine Contaminants. *Environ Sci Technol*. 2024 Dec 10;58(49):21393-21410. doi: 10.1021/acs.est.4c04453. Epub 2024 Nov 13. PMID: 39535433.

⁹⁴ Cousins IT, Johansson JH, Salter ME, Sha B, Scheringer M. Outside the Safe Operating Space of a New Planetary Boundary for Per- and Polyfluoroalkyl Substances (PFAS). *Environ Sci Technol*. 2022 Aug 16;56(16):11172-11179. doi: 10.1021/acs.est.2c02765. Epub 2022 Aug 2. PMID: 35916421; PMCID: PMC9387091.

⁹⁵ Bilott R. *Exposure: Poisoned water, corporate greed, and one lawyer's twenty-year battle against DuPont*. Atria Books; 2020.

1955.⁹⁶ In the 1990s PFAS started being detected in the blood of the general population.⁹⁷

106. In 2000, the United States Environmental Protection Agency (US EPA) opened a public docket (i.e. an official, open file to gather evidence from the public) to gather information on certain PFAS,⁹⁸ raised concerns with the global fluorochemical industry,⁹⁹ and, after 3M announced its PFOS phase-out, began international coordination to support a broader withdrawal.¹⁰⁰ By 2002, the agency reported that PFOA could pose health risks not only to communities with contaminated water but also to the general population.¹⁰¹ A PFOA stewardship programme involving all major PFAS companies was launched by the US EPA in 2010.¹⁰² In 2003–2004, PFOS, PFOA, and PFHxS were already found in the blood of all Americans tested.¹⁰³
107. Today, representative studies confirm near-universal exposure. For example, PFAS have been detected in the blood serum of a large majority of the population in the United States and other countries.¹⁰⁴ The results from a research project published in July 2025 by the Dutch National Institute of Health and the Environment (RIVM) show that everyone in the Netherlands has PFAS in their blood, with the amount of PFAS exceeding the health-based guidance value in almost all cases.¹⁰⁵
108. People accumulate PFAS in their bodies through multiple exposure routes, including ingestion of PFAS-contaminated food and water, inhalation of PFAS present in indoor or outdoor air, and absorption through the skin from PFAS-containing dust, surfaces,

⁹⁶ Gordon I. Nordby et J. Murray Luck [1956 Stanford.pdf](#).

⁹⁷ Buck RC, Franklin J, Berger U, Conder JM, Cousins IT, de Voogt P, Jensen AA, Kannan K, Mabury SA, van Leeuwen SP. Perfluoroalkyl and polyfluoroalkyl substances in the environment: terminology, classification, and origins. *Integr Environ Assess Manag*. 2011 Oct;7(4):513-41. doi: 10.1002/ieam.258. PMID: 21793199; PMCID: PMC3214619.

⁹⁸ (AR226-0639) PFOS Presentation to CMA. Auer, Charles M., USEPA. Washington, DC. June 19, 2000.

⁹⁹ Federal Register. *Perfluorooctanoic Acid (PFOA), Fluorinated Telomers; Request for Comment, Solicitation of Interested Parties for Enforceable Consent Agreement Development, and Notice of Public Meeting*. Document Citation : 68 FR 18626. Published: 16 April 2003. Available at: <https://www.federalregister.gov/documents/2003/04/16/03-9418/perfluorooctanoic-acid-pfoa-fluorinated-telomers-request-for-comment-solicitation-of-interested>.

¹⁰⁰ EPA, EPA and 3M announce phase out of PFOS. Available at: https://www.epa.gov/archive/epapages/newsroom_archive/newsreleases/33aa946e6cb11f35852568e1005246b4.html?utm_source=chatgpt.com

¹⁰¹ (AR226-0639) PFOS Presentation to CMA. Auer, Charles M., USEPA. Washington, DC. June 19, 2000.

¹⁰² 2010/2015 PFOA Stewardship Program - 2014 Annual Progress Reports: <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/20102015-pfoa-stewardship-program-2014-annual-progress#:~:text=As%20part%20of%20their%20commitment,submitted%20in%20October%20of%202006>.

¹⁰³ Calafat AM, Wong LY, Kuklenyik Z, Reidy JA, Needham LL. Polyfluoroalkyl chemicals in the U.S. population: data from the National Health and Nutrition Examination Survey (NHANES) 2003-2004 and comparisons with NHANES 1999-2000. *Environ Health Perspect*. 2007 Nov;115(11):1596-602. doi: 10.1289/ehp.10598. PMID: 18007991; PMCID: PMC2072821.

¹⁰⁴ PFAS Information for Clinicians. <https://www.atsdr.cdc.gov/pfas/hcp/clinical-overview/human-exposure.html>; https://papfas.rti.org/assets/papfas/ATSDR_PFAS-info-for-clinicians-508_January2024.pdf.

¹⁰⁵ RIVM Report „PFAS in bloed van de Nederlandse bevolking“. <https://www.rivm.nl/bibliotheek/rapporten/2025-0094.pdf>.

consumer products (such as cosmetics, cleaning products, cookware), or materials. These exposure pathways often occur in combination.

109. This widespread exposure is not limited to a handful of substances: thousands of PFAS exist, including more than 4,000 precursors that degrade into persistent PFAA.¹⁰⁶ Dr DeWitt highlights that the less well-studied PFAS pose the same type of adverse health effects as PFOA and PFOS.¹⁰⁷
110. People are exposed to different PFAS through multiple routes of exposure over time, resulting in cumulative impacts. According to Dr DeWitt:¹⁰⁸

People who are exposed to PFAS in the workplace or through environmental exposures are not exposed to one PFAS at a time via a single route of exposure; they are exposed to a mixture of PFAS across multiple routes of exposure and these exposure paradigms and mixtures are often complex in terms of the numbers of PFAS and their concentrations across exposure media. To date, however, very few toxicological studies of PFAS mixtures have been conducted due, in part, to the challenges of conducting experiments with complex mixtures. As such, it is often challenging to define all exposures for PFAS that address multiple PFAS and multiple routes of exposure, but data are starting to emerge to describe the toxicity of PFAS mixtures and the potential health risks that can arise from PFAS exposure across different routes of exposure.

111. There are, as of the time of this complaint, no validated medical treatments capable of reducing the amount of PFAS in the body.¹⁰⁹ Preventing exposure, therefore, remains the only reliable strategy.

2.4.2 General health harms linked to PFAS exposure

112. A distinction must be drawn between the hazard posed by a chemical and the adverse effects observed in exposed populations. The term “hazard” refers to the inherent ability of a chemical to cause harm, irrespective of whether harm has yet materialised in a given individual. “Adverse effects”, by contrast, are the concrete, measurable health impacts documented in epidemiological and toxicological studies.
113. A substantial and growing body of scientific evidence demonstrates PFAS’ hazards: they are inherent and well established.
114. The first academic study of PFAS in the US dates back to 1955.¹¹⁰ These risks have then been recognised by national and international environmental and public health authorities, including the US EPA¹¹¹ and the US Agency for Toxic Substances and

¹⁰⁶ McDonough C, Wenting L, Bischel H, DeSilva A, and DeWitt J. 2022. Widening the lens on PFASs: Direct human exposure on perfluoroalkyl precursors (pre-PFAAs). *Environmental Science and Technology*. 17:6004-6013.

¹⁰⁷ Dr DeWitt, p.10.

¹⁰⁸ Dr DeWitt, p.35.

¹⁰⁹ Khan, M. F. (2026). *PFAS Depuration in Humans: Toxicokinetics, Elimination Strategies, and Clinical Challenges*. *Biology & Molecular Medicine*, 1(2).

¹¹⁰ Gordon I. Nordby et J. Murray Luck: https://static.ewg.org/reports/2019/pfa-timeline/1956-Stanford.pdf?_ga=2.126530317.1253861871.1649070681-2123137255.1639662520

¹¹¹ United States Environmental Protection Agency (EPA), ‘Our Current Understanding of the Human Health and Environmental Risks of PFAS’

Disease Registry.¹¹² The “C8 Science Panel”, a committee of experts set up in 2005 in the context of PFAS-related litigation,¹¹³ concluded there were six *probable* health effects linked to PFAS exposure:¹¹⁴ pregnancy-induced hypertension/pre-eclampsia,¹¹⁵ ulcerative colitis,¹¹⁶ thyroid disease,¹¹⁷ cancer of the testes (threefold risk in exposed workers),¹¹⁸ kidney cancer,¹¹⁹ and high cholesterol.¹²⁰

115. The World Health Organization (WHO) also provides one of the most significant institutional reviews of PFAS exposure and health risks.¹²¹ Based on a case study conducted in the region of Veneto (Italy) in 2017,¹²² the WHO summarised the multiplicity of dangers that PFAS pose to health as follows:

Epidemiological studies have found an association between exposure to PFOA and PFOS and increased cholesterol, increased liver enzymes, decreased vaccination response, thyroid disorders, pregnancy-induced hypertension and preeclampsia. They have also found associations between serum PFOA and kidney and testicular tumours. There is also concern that PFOA and PFOS exposure results in suppression of the immune system, which is manifested as impaired immune function. Increases in blood cholesterol, similar to those found in adults, have also been found in children exposed to PFOA in drinking water.

116. In addition, a growing body of epidemiological and toxicological evidence, such as indexed reviews from the US National Library of Medicine, provide authoritative summaries of the epidemiological evidence. For example, a 2018 article from

<https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.

¹¹² Agency for Toxic Substances and Disease Registry (ATSDR), *Toxicological Profile for Perfluoroalkyls* (May 2021). Available at :

<https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf>.

¹¹³ This C8 Science Panel was established following a settlement between Dupont’s Washington Works and West Virginia communities in 2005. The panel was made up of: Dr. Tony Fletcher of the London School of Hygiene and Tropical Medicine, Dr. David Savitz of Brown University in Providence, and Dr. Kyle Steenland of Emory University in Atlanta. The question put to the Science Panel was whether there is a probable link between C8 (also known as ‘PFOA’) and any human disease. For more information on the panel: https://www.c8sciencepanel.org/panel_background.html.

¹¹⁴ C8 Science Panel. *C8 Study Publications*. <https://www.c8sciencepanel.org/publications.html>.

¹¹⁵ C8 Science Panel. *Probable Link Evaluation of Pregnancy Induced Hypertension and Preeclampsia*. 5 December 2011. https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_PIH_5Dec2011.pdf.

¹¹⁶ C8 Science Panel. *Probable Link Evaluation of Autoimmune Disease*. 30 July 2012. Available at: https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Autoimmune_Disease_30Jul2012.pdf.

¹¹⁷ C8 Science Panel. *Probable Link Evaluation of Thyroid Disease*. 30 July 2012. Available at: https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Thyroid_30Jul2012.pdf

¹¹⁸ C8 Science Panel. *Probable Link Evaluation of Cancer*. 15 April 2012. Available at: https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Cancer_16April2012_v2.pdf.

¹¹⁹ C8 Science Panel. *Probable Link Evaluation of Liver Diseases*. 29 October 2012. Available at: https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Liver_29Oct2012.pdf.

¹²⁰ C8 Science Panel. *Probable Link Evaluation for heart disease (including high blood pressure, high cholesterol, coronary artery disease)*. 29 October 2012. Available at: https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Heart_Disease_29Oct2012.pdf.

¹²¹ WHO, *Assessing the occurrence and human health risk of per- and polyfluoroalkyl substances*. <https://www.who.int/activities/assessing-the-occurrence-and-human-health-risk-of-per-and-polyfluoroalkyl-substances>.

¹²² WHO, 2017, *Keeping our water clean: the case of water contamination in the Veneto Region, Italy*, Technical document. <https://www.who.int/europe/publications/i/item/9789289052467>.

Sunderland et al.¹²³ and a 2023 review by India-Aldana et al.¹²⁴ confirm associations between PFAS exposure and a range of adverse health outcomes. These include effects on immune, endocrine, and reproductive systems, as well as potential links to certain cancers and other health issues.

117. Health practitioners and medical organisations are increasingly issuing public statements on the health impacts of PFAS, highlighting the growing evidence of harm.¹²⁵ Recent declarations by medical practitioners and associations,¹²⁶ as well as public-health experts,¹²⁷ emphasise that PFAS exposure is linked to serious and well-documented health outcomes, calling attention to the need to protect vulnerable populations such as children and pregnant people.
118. The robust statistical association between PFAS exposure and adverse health outcomes constitutes proof of harm. Proving a singular, direct causal link in any one individual is rendered nearly impossible by the realities of modern environmental exposure. Humans are routinely exposed to a complex "cocktail" of multiple PFAS variants and other synthetic chemicals. The resulting health effects frequently manifest years or decades after the initial exposure and vary based on individual predispositions, biological vulnerabilities, and distinct socio-environmental living conditions. Where independent, peer-reviewed studies consistently demonstrate a statistically significant correlation between PFAS exposure and a specific pathology, display a clear dose-response relationship, and are supported by identified biological mechanisms, the scientific consensus treats these robust associations as conclusive evidence of public health impact.
119. In the EU, data on PFAS health effects have led to regulatory decisions to classify¹²⁸ certain PFAAs, for example PFHpA, PFNA and PFDA and their salts, as carcinogens ('Carc. 2', except for PFHpA) and as toxic to reproduction ('Repr. 1B'), with effects on or via lactation (except for PFHpA) and specific-target organ toxicity.¹²⁹ Dr Dewitt's report,

¹²³ Sunderland, Elsie M; Hu, Xindi C; Dassuncao, Clifton; Tokranov, Andrea K; Wagner, Charlotte C ; [et al.](#) A review of the pathways of human exposure to poly- and perfluoroalkyl substances (PFASs) and present understanding of health effects, *Journal of Exposure Science and Environmental Epidemiology*; Tuxedo Vol. 29, Iss. 2, (Mar 2019): 131-147. DOI:10.1038/s41370-018-0094-1, [A review of the pathways of human exposure to poly- and perfluoroalkyl substances \(PFASs\) and present understanding of health effects | Journal of Exposure Science & Environmental Epidemiology](#)

¹²⁴ India-Aldana S, Yao M, Midya V, Colicino E, Chatzi L, Chu J, Gennings C, Jones DP, Loos RJF, Setiawan VW, Smith MR, Walker RW, Barupal D, Walker DI, Valvi D. PFAS Exposures and the Human Metabolome: A Systematic Review of Epidemiological Studies. *Curr Pollut Rep.* 2023 Sep;9(3):510-568. doi: 10.1007/s40726-023-00269-4. Epub 2023 Jun 29. PMID: 37753190; PMCID: PMC10520990.

¹²⁵ Medical Professionals for PFAS Action (2025). *Open Letter on the Health Impacts of PFAS Exposure*. Signed by over 150 doctors, nurses and public-health experts. Published 3 June 2025 - <https://europe.noharm.org/sites/default/files/2025-06/PFAS%20letter%20from%20healthcare%20sector%20final%203.6.25.pdf>.

¹²⁶ For example, in June 2026, a group of French doctors sent a letter to the French government: <https://cn-urps-ml.org/communiqu%C3%A9%20presse/journee-mondiale-de-la-sant%C3%A9-environnementale-apr%C3%A9s-le-cadmium-les-m%C3%A9decins-liberaux-tirent-la-sonnette-dalarme-sur-la-pollution-de-leau-potable/>.

¹²⁷ Le Spécialiste. *L'actualité des médecins spécialistes. PFAS : les Mutualités Libres appellent à « fermer le robinet »*. Available at : <https://www.lespecialiste.be/fr/actualites/pfas-les-mutualites-libres-appellent-a-la-fermeture-du-robinet-raquo.html>.

¹²⁸ i.e. to have risk indicators applied and be made subject to labelling requirements, in line with the EU Classification, Labelling and Packaging (CLP) Regulation.

¹²⁹ Official Journal of the European Union. COMMISSION REGULATION (EU) 2021/1297 of 4 August 2021. Available at: [Commission Regulation \(EU\) 2021/1297 of 4 August 2021 amending Annex XVII to Regulation \(EC\) No 1907/2006 of the European Parliament and of the Council as regards](#)

as well as an annexed report from Dr Philippe Grandjean, provide details about specific organ toxicity, notably on the liver and kidneys.¹³⁰

120. The following sections summarise the principal health impacts documented in the general population. Dr DeWitt's and Dr Grandjean's reports provide further details on each of those impacts.

Harm to the immune system

121. Consistent evidence indicates that PFAS exposure is associated with severe adverse effects on the immune system.
122. EFSA, in its 2020 scientific opinion, considered the effects of PFAS on the immune system's response to vaccination as their most critical health effect.¹³¹ The US Agency for Toxic Substances and Disease Registry reached a similar conclusion in 2021 in one of the most comprehensive toxicological assessments of PFAS.¹³²
123. Recent academic and governmental research confirms that PFAS exposure is linked to immune system suppression.¹³³
124. For example, Dr Grandjean reported impaired vaccine response associated with PFAS exposure, while a 2020 Danish study identified an association between exposure to PFBA, a short-chain PFAS, and increased severity of COVID-19 (this PFAS is known to accumulate in the lungs).¹³⁴ The suppression of responses to vaccinations thus decreases adaptivity, long-term protection, and resilience of the human immune system.¹³⁵

[perfluorocarboxylic acids containing 9 to 14 carbon atoms in the chain \(C9-C14 PFCAs\), their salts and C9-C14 PFCA-related substances](#)
[L_2021282EN.01002901.xml](#)

¹³⁰ See DeWitt, pp.29-31 and Grandjean, pp.45-47.

¹³¹ EFSA (European Food Safety Authority). 2020. Scientific Opinion on the risk to human health related to the presence of perfluoroalkyl substances in food. EFSA Journal, 18 (9): 6223, 391pp. [Doi: 10.2903/j.efsa.2020.6223](#).

¹³² Agency for Toxic Substances and Disease Registry, Toxicological Profile for Perfluoroalkyls, US Department of Health and Human Services, Washington D.C. (2021).

¹³³ Zhang L, Louie A, Rigutto G, Guo H, Zhao Y, Ahn S, et al. A systematic evidence map of chronic inflammation and immunosuppression related to per- and polyfluoroalkyl substance (PFAS) exposure. *Environ Res.* 2023;220:115188. doi: 10.1016/j.envres.2022.115188.; Garvey GJ, Anderson JK, Goodrum PE, Tyndall KH, Cox LA, Khatami M, Morales-Montor J, Schoeny RS, Seed JG, Tyagi RK, Kirman CR, Hays SM. Weight of evidence evaluation for chemical-induced immunotoxicity for PFOA and PFOS: findings from an independent panel of experts. *Crit Rev Toxicol.* 2023;53:34–51; Ehrlich V, Bil W, Vandebriel R, Granum B, Luijten M, Lindeman B, Grandjean P, Kaiser A-M, Hauzenberger I, Hartmann C, Gundacker C, Uhl M. Consideration of pathways for immunotoxicity of per- and polyfluoroalkyl substances (PFAS). *Environ Health.* 2023;22:19. 10.1186/s12940-022-00958-5. Recent review of the mechanisms of immunotoxicity of PFAS. 10.1080/10408444.2023.2194913; Bline AP, DeWitt JC, Kwiatkowski CF, Pelch KE, Reade A, Varshavsky JR. Public Health Risks of PFAS-Related Immunotoxicity Are Real. *Curr Environ Health Rep.* 2024 Jun;11(2):118-127. doi: 10.1007/s40572-024-00441-y. Epub 2024 Mar 25. PMID: 38526771; PMCID: PMC11081924.

¹³⁴ Forever chemicals: the persistent effects of perfluoroalkyl and polyfluoroalkyl substances on human health", *eBioMedicine* (The Lancet Discovery Science), Vol. 92, 2023, Article No. 104627, available at: [https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964\(23\)00372-9/fulltext](https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(23)00372-9/fulltext)

¹³⁵ Grandjean P, Budtz-Jørgensen E. Immunotoxicity of perfluorinated alkylates: calculation of benchmark doses based on serum concentrations in children. *Environ Health.* 2013 Apr 19;12(1):35. doi: 10.1186/1476-069X-12-35. PMID: 23597293; PMCID: PMC3643874. See also: DeWitt, pp.26-29 and Grandjean, pp.35-37.

Carcinogenicity

125. Cancer has been consistently identified as one of the most serious adverse health outcomes associated with exposure to PFAS. The evidence base is now extensive and multifaceted, combining epidemiological studies, toxicological research, and authoritative evaluations by international scientific bodies.
126. The International Agency for Research on Cancer (IARC) carried out an evaluation to investigate the association between PFAS exposure and cancer in humans. In its 2023 Monograph 135, the IARC classified PFOA as “carcinogenic to humans” and PFOS as “possibly carcinogenic to humans”.¹³⁶
127. The US National Cancer Institute (NCI), one of the world’s largest cancer epidemiology research groups, provides a comprehensive overview of this evidence, highlighting associations between PFAS exposure and several cancer types, from kidney cancer to testicular cancer,¹³⁷ along with a summary of the results of the many case-control studies recently conducted.¹³⁸
128. This conclusion is reinforced by the US National Academies of Sciences, Engineering, and Medicine (NASEM), whose 2022 consensus report – prepared by an independent expert committee – finds that PFAS exposure is associated with a range of adverse health effects, including “certain cancers”, and identifies increased risks, in particular, for kidney cancer.
129. Additional epidemiological studies, including those referenced in Dr DeWitt’s and Dr Grandjean’s expert reports, have identified associations between PFAS exposure and a broader range of cancers: testicular, kidney, chronic lymphocytic leukaemia, bladder, non-Hodgkin’s lymphoma, thyroid, oesophagus, liver, and breast cancer.¹³⁹
130. In line with these findings, recent studies shed light on how certain PFAS may affect our intestines and possibly increase the risk of developing colorectal cancer,¹⁴⁰ and may increase the incidence of cancer in the digestive, endocrine, oral cavity/pharynx, and respiratory systems.¹⁴¹
131. In the context of litigation, courts have evaluated extensive exposure and health data, including cancer cases. For example, the C8 Science Panel mentioned earlier concluded there is a “*probable link*” between PFOA exposure and kidney and testicular

¹³⁶ Dr DeWitt, p.23. <https://monographs.iarc.who.int/news-events/volume-135-perfluorooctanoic-acid-and-perfluorooctanesulfonic-acid/>.

¹³⁷ National Cancer Institute, Division of Cancer Epidemiology & Genetics, *PFAS Exposure and Risk of Cancer*. Available at: <https://dceg.cancer.gov/research/what-we-study/pfas>.

¹³⁸ For example: Rhee J, et al. [A prospective nested case-control study of serum concentrations of per- and polyfluoroalkyl substances and aggressive prostate cancer risk](#). *Environ Res*. 2023.

¹³⁹ Dr Grandjean, pp.38-39.

¹⁴⁰ Newswise, “*New Study Links ‘Forever Chemical’ PFOS with Colorectal Cancer*,” reporting on a University of Kentucky Markey Cancer Center study published in *Chemosphere*, <https://www.newswise.com/articles/markey-cancer-center-study-links-forever-chemicals-with-colorectal-cancer>.

¹⁴¹ Li S, Oliva P, Zhang L, Goodrich JA, McConnell R, Conti DV, Chatzi L, Aung M. Associations between per- and polyfluoroalkyl substances (PFAS) and county-level cancer incidence between 2016 and 2021 and incident cancer burden attributable to PFAS in drinking water in the United States. *J Expo Sci Environ Epidemiol*. 2025 May;35(3):425-436. doi: 10.1038/s41370-024-00742-2. Epub 2025 Jan 9. PMID: 39789195; PMCID: PMC12069088.

cancer.¹⁴² The “probable” link designation met a legal standard for causation sufficient to support settlement and compensation frameworks in the United States.

Research on the potential lethal effects of PFAS, after developing cancer, has recently been accepted by courts. In May 2025, for instance, the Italian Court of Vicenza linked a worker’s death from urothelial carcinoma (the most common type of bladder cancer) to exposure to PFOA and PFOS at his workplace.¹⁴³ For a broader overview of PFAS-related judicial and administrative proceedings across Europe, see Annex R (Comparative European PFAS Jurisprudence).

132. Other public cases, such as that of Amara Strande, a young woman from Minnesota (USA) who developed a rare liver cancer in a PFAS-contaminated community and died from it, highlight the possible human impact of such exposures, even when direct individual causation cannot be definitively established.¹⁴⁴
133. In southern France, public health surveillance bodies have repeatedly documented a higher-than-expected incidence of glioblastoma, an aggressive brain tumour, in the communes of Salindres and Rousson, with incidence rates around three times the average in the *département* over 2006-2020. These observations prompted investigations into potential environmental contributors, including PFAS.¹⁴⁵ The area is home to a large chemical platform operated by Solvay, which produced PFAS, including TFA, until 2024.¹⁴⁶ The association between the site's emissions and the documented glioblastoma cluster has not been established and remains under investigation by public health authorities.

Harm to the reproductive system

134. PFAS exposure is associated with a wide range of impacts on reproductive health.¹⁴⁷

¹⁴² A “probable link” is defined in the Settlement Agreement to mean that given the available scientific evidence, it is more likely than not that among class members a connection exists between PFOA exposure and a particular human disease.

https://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Cancer_16April2012_v2.pdf.

¹⁴³ CERTIFICO. Informazione tecnica HSE. Available at: <https://certifico.com/sicurezza-lavoro/documenti-sicurezza/24044-sentenza-tribunale-di-vicenza-13-maggio-2025-pfas-e-malattia-professionale>.

¹⁴⁴ CBS News. Sister of Amara Strande, who fought to ban PFAS, continues her mission. Available at: <https://www.cbsnews.com/minnesota/news/pfas-amara-strande-forever-chemicals/>.

¹⁴⁵ Suspicion d’excès de cas de glioblastomes dans les communes gardoises de Salindres et Rousson : mise à jour des données de surveillance sur la période 2016-2020. Rapport final. Publié le 6 février 2024. Available at : <https://www.santepubliquefrance.fr/regions/occitanie/documents/enquetes-etudes/2024/suspicion-d-exces-de-cas-de-glioblastomes-dans-les-communes-gardoises-de-salindres-et-rousson-mise-a-jour-des-donnees-de-surveillance-sur-la-peri>.

¹⁴⁶ Préfet de la région occitanie. Commission de suivi de site. Available at: https://www.occitanie.developpement-durable.gouv.fr/IMG/pdf/presentation_dreal_css_salindres_.pdf.

¹⁴⁷ See for example: Rickard BP, Rizvi I, Fenton SE. Per- and poly-fluoroalkyl substances (PFAS) and female reproductive outcomes: PFAS elimination, endocrine-mediated effects, and disease. *Toxicology*. 2022 Jan 15;465:153031. doi: 10.1016/j.tox.2021.153031. Epub 2021 Nov 10. PMID: 34774661; PMCID: PMC8743032. See also: Grandjean, pp.39-41 and DeWitt, p.32,

135. In women, studies report fertility being reduced by as much as 40%,¹⁴⁸ as well as delays in becoming pregnant,¹⁴⁹ miscarriage,¹⁵⁰ pre-eclampsia,¹⁵¹ and elevated blood pressure during pregnancy.¹⁵² Other reproductive disorders such as endometriosis¹⁵³ and polycystic ovary syndrome have been associated with PFAS exposure.¹⁵⁴
136. In men, PFAS exposure is linked to reduced sperm count and reduced fertility.¹⁵⁵
137. Regulatory authorities in the EU have started looking into these specific effects. In June 2026, ECHA, the European Chemicals Agency, officially classified TFA, a PFAS widely present in European waters,¹⁵⁶ as toxic for reproduction.¹⁵⁷

Endocrine and metabolic disruption

¹⁴⁸ National Institute of Environmental Health Sciences. *PFAS Exposure linked to reduced fertility in women*. Available at: <https://www.niehs.nih.gov/research/supported/centers/core/spotlight/fertility>.

¹⁴⁹ Sims CR, Sehgal N, Turner D, Havens LA, Morris AJ, Shankar K, Pearson KJ, Everson TM, Andres A. Individual and mixtures of PFAS during pregnancy are associated with maternal cardiometabolic outcomes during pregnancy. *Environ Health*. 2025 Apr 30;24(1):26. doi: 10.1186/s12940-025-01181-8. PMID: 40307774; PMCID: PMC12042336.

¹⁵⁰ Jensen TK, Andersen LB, Kyhl HB, Nielsen F, Christesen HT, Grandjean P. 2015. Association between perfluorinated compound exposure and miscarriage in Danish pregnant women. *PLoS One* 10(4):e0123496, PMID: 25848775, 10.1371/journal.pone.0123496.

¹⁵¹ Cathey A, Woodbury M, Varshavsky J, Velasquez S, Zhu Y, Alshawabkeh A, Cordero J, Velez-Vega C, Peterson A, Ferrara A, Meeker JD; ECHO Cohort Consortium. Association between gestational PFAS exposure biomarkers and risk of preeclampsia in the ECHO Cohort. *Environ Res*. 2026 Mar 1;292:123597. doi: 10.1016/j.envres.2025.123597. Epub 2025 Dec 24. PMID: 41453703; PMCID: PMC12995418.

¹⁵² Preston EV, Hivert MF, Fleisch AF, Calafat AM, Sagiv SK, Perng W, Rifas-Shiman SL, Chavarro JE, Oken E, Zota AR, James-Todd T. Early-pregnancy plasma per- and polyfluoroalkyl substance (PFAS) concentrations and hypertensive disorders of pregnancy in the Project Viva cohort. *Environ Int*. 2022 Jul;165:107335. doi: 10.1016/j.envint.2022.107335. Epub 2022 Jun 6. PMID: 35696844; PMCID: PMC9348856.

¹⁵³ Zhang H, Zeng S, Yu J, Zhu F, Yang X, He W, Liu Y, Liang Y, Liang Y, Hong W, Yuan Q. Per- and polyfluoroalkyl substances exposure and endometriosis risk: Evidence from epidemiologic, network toxicology, and molecular docking. *iScience*. 2025 Nov 19;28(12):114145. doi: 10.1016/j.isci.2025.114145. PMID: 41492385; PMCID: PMC12765064.

¹⁵⁴ Zhang Y, Martin L, Mustieles V, Ghaly M, Archer M, Sun Y, Torres N, Coburn-Sanderson A, Souter I, Petrozza JC, Botelho JC, Calafat AM, Wang YX, Messerlian C. Per- and polyfluoroalkyl substances exposure is associated with polycystic ovary syndrome risk among women attending a fertility clinic. *Sci Total Environ*. 2024 Nov 10;950:175313. doi: 10.1016/j.scitotenv.2024.175313. Epub 2024 Aug 6. PMID: 39117221; PMCID: PMC11357523.

¹⁵⁵ Notably: Sun Z, Wen Y, Wang B, Deng S, Zhang F, Fu Z, Yuan Y, Zhang D. Toxic effects of per- and polyfluoroalkyl substances on sperm: Epidemiological and experimental evidence. *Front Endocrinol (Lausanne)*. 2023 Feb 20;14:1114463. doi: 10.3389/fendo.2023.1114463. PMID: 36891048; PMCID: PMC9986484; Maxwell DL, Petriello MC, Pilsner JR. PFAS Exposure and Male Reproductive Health: Implications for Sperm Epigenetics. *Semin Reprod Med*. 2024 Dec;42(4):288-301. doi: 10.1055/s-0044-1801363. Epub 2025 Jan 9. PMID: 39788533; PMCID: PMC11893235.

¹⁵⁶ Arp HPH, Gredelj A, Glüge J, Scheringer M, Cousins IT. The Global Threat from the Irreversible Accumulation of Trifluoroacetic Acid (TFA). *Environ Sci Technol*. 2024 Nov 12;58(45):19925-19935. doi: 10.1021/acs.est.4c06189. Epub 2024 Oct 30. PMID: 39475534; PMCID: PMC11562725. See at: <https://pubs.acs.org/doi/10.1021/acs.est.4c06189>.

¹⁵⁷ The proposition was submitted by Germany. The current stage of the work is available at the ECHA website: https://echa.europa.eu/fr/registry-of-clh-intentions-until-outcome/-/dislist/details/0b0236e188e6e587?_dislists_WAR_dislistsportlet_businessIdentifier=0b0236e188e6e587.

138. PFAS are also recognised as endocrine-disrupting chemicals, i.e. capable of interfering with the body's hormonal systems.¹⁵⁸
139. Scientific data worryingly show that in many cases the newest “short-chain” PFAS exhibit similar or even higher endocrine disrupting potential than long-chain PFAS.¹⁵⁹
140. Endocrine disruption is particularly concerning because hormones regulate essential physiological functions.¹⁶⁰ Endocrine disruption affects metabolic functions,¹⁶¹ growth and development, reproduction, neurological function, immune regulation, and cardiovascular stability.¹⁶²
141. Epidemiological studies have already linked PFAS exposure to elevated cholesterol,¹⁶³ thyroid hormone imbalances,¹⁶⁴ and disruptions affecting growth, neurological development, sleep, mood, and bone density.¹⁶⁵
142. Prospective birth cohort studies from Europe, North America, and Asia report statistically significant associations between higher maternal PFAS levels and a range of neurodevelopmental disorders, including autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), cognitive delays (e.g., reduced IQ, language impairments), and behavioural dysregulation.¹⁶⁶

¹⁵⁸ Mokra K. Endocrine disruptor potential of short- and long-chain perfluoroalkyl substances (PFASs)—a synthesis of current knowledge with proposal of molecular mechanism. *Int J Mol Sci.* 2021;22(4):2148. doi: 10.3390/ijms22042148.

¹⁵⁹ Mokra K. Endocrine Disruptor Potential of Short- and Long-Chain Perfluoroalkyl Substances (PFASs)-A Synthesis of Current Knowledge with Proposal of Molecular Mechanism. *Int J Mol Sci.* 2021 Feb 21;22(4):2148. doi: 10.3390/ijms22042148. PMID: 33670069; PMCID: PMC7926449.

¹⁶⁰ EDC-2: The Endocrine Society's Second Scientific Statement on Endocrine-Disrupting Chemicals, *Endocrine Reviews*, Volume 36, Issue 6, 1 December 2015, Pages E1–E150, <https://doi.org/10.1210/er.2015-1010>.

¹⁶¹ India-Aldana S, Yao M, Midya V, Colicino E, Chatzi L, Chu J, Gennings C, Jones DP, Loos RJF, Setiawan VW, Smith MR, Walker RW, Barupal D, Walker DI, Valvi D. PFAS Exposures and the Human Metabolome: A Systematic Review of Epidemiological Studies. *Curr Pollut Rep.* 2023 Sep;9(3):510-568. doi: 10.1007/s40726-023-00269-4. Epub 2023 Jun 29. PMID: 37753190; PMCID: PMC10520990.

¹⁶² Gaillard L, Barouki R, Blanc E, Coumoul X, Andréau K. Per- and polyfluoroalkyl substances as persistent pollutants with metabolic and endocrine-disrupting impacts. *Trends Endocrinol Metab.* 2025 Mar;36(3):249-261. doi: 10.1016/j.tem.2024.07.021. Epub 2024 Aug 23. PMID: 39181731.

¹⁶³ Connolly JC, Ishihara Y, Sawaya E, Whitfield V, Garrity N, Sohata R, Tsymbal M, Lundberg A, La Merrill MA, DeWitt JC, Ehrlich AK, Vogel CFA. Per- and Polyfluoroalkyl Substances (PFAS) Enhance Cholesterol Accumulation and Dysregulate Inflammatory Responses in Macrophages. *Cardiovasc Toxicol.* 2025 Oct;25(10):1455-1470. doi: 10.1007/s12012-025-10048-w. Epub 2025 Jul 29. PMID: 40728694; PMCID: PMC12432094.

¹⁶⁴ Coperchini F, Croce L, Ricci G, Magri F, Rotondi M, Imbriani M, Chiovato L. Thyroid Disrupting Effects of Old and New Generation PFAS. *Front Endocrinol (Lausanne).* 2021 Jan 19;11:612320. doi: 10.3389/fendo.2020.612320. PMID: 33542707; PMCID: PMC7851056.

¹⁶⁵ See DeWitt, pp.25-26 and Grandjean, pp.41-45. On the link between PFAS and disrupted sleep, for example, see also: Li S, Goodrich JA, Chen JC, Costello E, Beglarian E, Liao J, Alderete TL, Valvi D, Baumert BO, Rock S, Eckel SP, McConnell R, Gilliland FD, Chen Z, Conti DV, Chatzi L, Aung M. Per- and polyfluoroalkyl substances and disrupted sleep: mediating roles of proteins. *Environ Adv.* 2024 Oct;17:100585. doi: 10.1016/j.envadv.2024.100585. Epub 2024 Sep 17. PMID: 39512894; PMCID: PMC11542765.

¹⁶⁶ Lagostena L, Magnelli V, Rotondo D, Dondero F. Persistent pollutants and the developing brain: the role of PFAS in neurodevelopmental disorders. *Front Cell Neurosci.* 2025 Nov 21;19:1696173. doi: 10.3389/fncel.2025.1696173. PMID: 41356495; PMCID: PMC12678283.

143. These endocrine effects contribute to serious conditions such as ulcerative colitis¹⁶⁷ (well described by Dr Grandjean¹⁶⁸) and play a central role in PFAS-related reproductive harms, in particular in women.¹⁶⁹
144. By virtue of their endocrine-disrupting properties, as well as through direct toxic effects on organs, PFAS impair both liver and kidney function. These organs are essential for detoxification, metabolic regulation, and hormonal balance. The US government Agency for Toxic Substances and Disease Registry's *Toxicological Profile for Perfluoroalkyls* (2021), the US NASEM consensus report (2022), EFSA (2020) and the WHO (2017) – cited above – provide details on how disruption of these functions can in turn affect a wide range of essential physiological processes, including metabolism, growth and development, tissue integrity, sexual and reproductive function, neurological activity, weight regulation and bone density.

Cardiovascular system toxicity

145. PFAS exposure has been linked to increased cardiovascular effects, such as hyperlipidaemia,¹⁷⁰ diabetes, and hypertension. Dr DeWitt notes that although the link with increased cardiovascular diseases as such is not strong, some studies show signals for links between certain PFAS and specific heart-related conditions.¹⁷¹
146. Notably, in a study performed in the Veneto region between 1980–2013, a statistically significant increase in the mortality rate was observed for cardiovascular diseases, including diabetes mellitus, cerebrovascular diseases and, mainly, myocardial infarction in PFAS-contaminated municipalities when compared to municipalities that were not contaminated.¹⁷²
147. Dr Grandjean notes that, given that cardiovascular disease is a leading cause of death, even a small PFAS-related increase in risk has substantial public health implications.¹⁷³
148. PFAS-induced metabolic and endocrine disruptions further compound these risks.

No safe exposure level – effects at low dose

149. A striking feature of PFAS toxicity is that adverse effects occur even at the lowest levels of exposure.¹⁷⁴

¹⁶⁷ Steenland K, Kugathan S, Barr DB. PFOA and ulcerative colitis. *Environ Res.* 2018 Aug;165:317-321. doi: 10.1016/j.envres.2018.05.007. Epub 2018 May 16. PMID: 29777922; PMCID: PMC6358414.

¹⁶⁸ Dr Grandjean, p.37.

¹⁶⁹ Rickard BP, Rizvi I, Fenton SE. Per- and poly-fluoroalkyl substances (PFAS) and female reproductive outcomes: PFAS elimination, endocrine-mediated effects, and disease. *Toxicology.* 2022;465:153031. doi: 10.1016/j.tox.2021.153031.

¹⁷⁰ Hyperlipidaemia is when levels of blood fats, especially cholesterol and/or triglycerides, are higher than normal, which increases the risk of cardiovascular disease.

¹⁷¹ Dr DeWitt, p.39.

¹⁷² Mastrantonio M, Bai E, Uccelli R, Cordiano V, Screpanti A, Crosignani P. Drinking Water Contamination From Perfluoroalkyl Substances (PFAS): An Ecological Mortality Study in the Veneto Region, Italy. *Eur J Public Health* (2018) 28(1):180–5. 10.1093/eurpub/ckx066.

¹⁷³ Dr Grandjean, p.48.

¹⁷⁴ Fenton SE, Ducatman A, Boobis A, DeWitt JC, Lau C, Ng C, Smith JS, Roberts SM. Per- and Polyfluoroalkyl Substance Toxicity and Human Health Review: Current State of Knowledge and Strategies for Informing Future Research. *Environ Toxicol Chem.* 2021 Mar;40(3):606-630. doi: 10.1002/etc.4890. Epub 2020 Dec 7. PMID: 33017053; PMCID: PMC7906952.

150. Animal tests confirm growth deficits and developmental delays in offspring exposed to low PFAS doses,¹⁷⁵ while low- dose exposure to PFOA and PFHxA was associated with higher odds of infertility.¹⁷⁶
151. A study from the US National Toxicology Program shows that following gestational and chronic exposure to PFOA, 58% of male rats demonstrated pancreatic tumours at the lowest dose administered.¹⁷⁷ Low exposure to PFAS, in particular to PFOA and its replacement GenX, has also been associated with disruption of liver metabolism.¹⁷⁸
152. Although various authorities such as EFSA and the US EPA have set health-based guidance values for PFAS, evidence suggests that there may be no safe exposure level to PFAS. This means that even at concentrations below existing regulatory thresholds, adverse effects cannot be ruled out, and it remains impossible to predict, on an individual basis, if, when, or how these substances will impact health.¹⁷⁹
153. The lack of safe exposure level for PFOA and PFOS has already been confirmed by the US EPA.¹⁸⁰

Combined toxicity

154. PFAS exposure is cumulative: individuals are exposed to mixtures of PFAS at the same time and across multiple routes. These mixtures may produce greater toxicity than individual PFAS substances.
155. In pointing to studies on the combination effects of PFAS mixtures, Dr DeWitt highlights that:¹⁸¹

[i]t is therefore likely that other combinations of PFAS may produce combined toxicity that is greater than the toxicity of each individual PFAS.

156. Further, as PFAS accumulates in human blood, effective treatment would need to lower the total amount of PFAS the body is carrying. However, current treatment approaches

¹⁷⁵ Blake BE, Cope HA, Hall SM, Keys RD, Mahler BW, McCord J, Scott B, Stapleton HM, Strynar MJ, Elmore SA, Fenton SE. 2020. Evaluation of maternal, embryo, and placental effects in CD-1 mice following gestational exposure to perfluorooctanoic acid (PFOA) or hexafluoropropylene oxide dimer acid (HFPO-DA or GenX). *Environ Health Perspect* 128:27006.

¹⁷⁶ Velez MP, Arbuckle TE, Fraser WD. 2015. Maternal exposure to perfluorinated chemicals and reduced fecundity: The MIREC study. *Hum Reprod* 30:701–709.

¹⁷⁷ National Toxicology Program. 2020b. P08: Statistical analysis of primary tumors—Perfluorooctanoic acid. US Department of Health and Human Services, Research Triangle Park, NC. [cited 2020 September 15].

¹⁷⁸ Attema B, Janssen AWF, Rijkers D, van Schothorst EM, Hooiveld GJEJ, Kersten S. Exposure to low-dose perfluorooctanoic acid promotes hepatic steatosis and disrupts the hepatic transcriptome in mice. *Mol Metab*. 2022 Dec;66:101602. doi: 10.1016/j.molmet.2022.101602. Epub 2022 Sep 14. PMID: 36115532; PMCID: PMC9526138.

¹⁷⁹ Dr DeWitt , p. 15, Dr Grandjean, p. 90, Prof. dr. Boer, p. 5 and the references cited in those reports.

¹⁸⁰ Brita E. Lundberg, MD and Michael Bader, MD. Massachusetts Medical Society. *PFAS Impacts on Health: What the Clinician Needs to Know*. Available at: <https://www.massmed.org/Patient-Care/Health-Topics/PFAS-Impacts-on-Health--What-the-Clinician-Needs-to-Know/#:~:text=Health%20effects,level%20of%20exposure%20to%20PFAS.>

¹⁸¹ Dr DeWitt, p.36.

remain investigational, and no established therapies have been validated to date. At the time of this complaint, the only available and certain strategy remains prevention.¹⁸²

Long-term effects

157. PFAS are responsible for long-term health impacts due to their strong chemical stability, bioaccumulative properties, and long persistence in the human body.
158. Chronic exposure affects multiple physiological systems and may trigger conditions that develop only after prolonged latency.
159. As Dr DeWitt explains, many adverse effects of chronic exposure emerge over time,¹⁸³ and longitudinal studies are essential to fully understand these risks.¹⁸⁴ Dr Grandjean similarly emphasises that current evidence likely underestimates the true extent of PFAS toxicity, particularly regarding delayed effects and vulnerable subpopulations.¹⁸⁵
160. Furthermore, since PFAS can accumulate in the body and may be transferred from mother to child during pregnancy and breastfeeding, harmful effects may extend across generations. Exposure begins before birth and continues during early childhood, a critical period for development.¹⁸⁶ These early-life exposures, combined with the persistence of PFAS in the body and environment, influence lifelong health outcomes.¹⁸⁷
161. Consequently, PFAS exposure not only raises concerns for individual health but may also have broader long-term implications for population health and reproductive capacity.

2.4.3 Increased adverse effects on the health of children

162. Children are particularly susceptible to the adverse effects of PFAS exposure.
163. This heightened vulnerability arises from a combination of biological sensitivity, distinct exposure pathways, and greater exposure per unit of body weight.
164. During pregnancy, PFAS cross the placenta and are consistently detected in umbilical cord blood.¹⁸⁸ In other words, exposure to PFAS begins in utero, during critical developmental windows when the immune, endocrine, and metabolic systems are forming. Studies show that PFAS can alter the transcription of genes during early

¹⁸² Dr Grandjean, pp. 48-49.

¹⁸³ Dr DeWitt, p. 28.

¹⁸⁴ Dr DeWitt, p. 32.

¹⁸⁵ Dr Grandjean, p. 25 (footnotes omitted).

¹⁸⁶ Science Direct. Sadia Khan, Marion Ouidir, Nicolas Lemaitre, Nicolas Jovanovic, Sam Bayat, Sarah Lyon-Caen, Pascale Hoffmann, Morgane Desseux, Cathrine Thomsen, A. Couturier-Tarrade, Line Småstuen Haug, Séverine Valmary-Degano, Valérie Siroux, Rémy Slama, Nadia Alfaidy, Claire Philppat,

PFAS exposure during pregnancy: Implications for placental health and functioning,

Environment International, Volume 197, 2025, 109308, ISSN 0160-4120,

[PFAS exposure during pregnancy: Implications for placental health and functioning - ScienceDirect.](#)

¹⁸⁷ Blake BE, Fenton SE. Early life exposure to per- and polyfluoroalkyl substances (PFAS) and latent health outcomes: A review including the placenta as a target tissue and possible driver of peri- and postnatal effects. *Toxicology*. 2020 Oct;443:152565. doi: 10.1016/j.tox.2020.152565. Epub 2020 Aug 27. PMID: 32861749; PMCID: PMC7530144.

¹⁸⁸ Pan Y, et al. Novel Chlorinated Polyfluorinated Ether Sulfonates and Legacy Per-/Polyfluoroalkyl Substances: Placental Transfer and Relationship with Serum Albumin and Glomerular Filtration Rate, vol. 51. *Environmental Science & Technology*; 2017. p. 634–44.

development, affecting genes related to growth, nervous system function and metabolism.¹⁸⁹

165. Early-life exposure is therefore uniquely consequential, as it can shape long-term health trajectories and influence disease risk across the lifespan.
166. After birth, infants and toddlers experience higher exposure per unit of body weight than adults. Empirical studies show that elevated PFAS concentrations in early life are driven by breastfeeding, mouthing of objects, consuming contaminated food, and increased contact with dust and soil.¹⁹⁰ Ingestion of household dust and soil is particularly relevant for young children, who crawl, play close to the ground, and frequently place their hands in their mouths.¹⁹¹
167. As Dr Grandjean illustrates in his exposure pathway framework, early-life PFAS exposure can lead to long-term and potentially irreversible consequences:¹⁹²

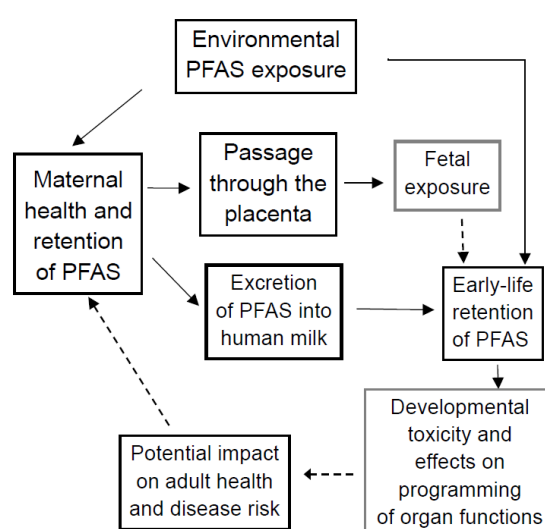


Figure 3. Early-life PFAS exposure pathway framework, Dr Grandjean, p. 30.

168. A growing body of scientific evidence indicates that PFAS exposure is associated with a range of grave health outcomes in children. A 2022 review by the Environmental Working Group, an NGO, examined 40 studies measuring PFAS in umbilical cord blood and

¹⁸⁹ Perng W, Nakiwala D, Goodrich JM. What happens in Utero does not stay in Utero: a review of evidence for prenatal epigenetic programming by per- and polyfluoroalkyl substances (PFAS) in infants, children, and adolescents. *Curr Environ Health Rep*. 2023;10(1):35–44.

¹⁹⁰ Ratier A, Casas M, Grazuleviciene R, Slama R, Småstuen Haug L, Thomsen C, Vafeiadi M, Wright J, Zeman FA, Vrijheid M, Brochot C. Estimating the dynamic early life exposure to PFOA and PFOS of the HELIX children: Emerging profiles via prenatal exposure, breastfeeding, and diet. *Environ Int*. 2024 Apr;186:108621. doi: 10.1016/j.envint.2024.108621. Epub 2024 Apr 2. PMID: 38593693; Manzano-Salgado CB, Casas M, Lopez-Espinosa MJ, Ballester F, Iñiguez C, Martinez D, Costa O, Santa-Marina L, Pereda-Pereda E, Schettgen T, Sunyer J, Vrijheid M. Prenatal exposure to perfluoroalkyl substances and birth outcomes in a Spanish birth cohort. *Environ Int*. 2017 Nov;108:278-284. doi: 10.1016/j.envint.2017.09.006. PMID: 28917208.

¹⁹¹ Dr DeWitt, p. 31.

¹⁹² Dr Grandjean, p. 30.

reporting health outcomes. Over one-third found associations between PFAS detected at birth, PFAS levels later in childhood, and increased health risks.¹⁹³

169. The strongest and most consistent evidence concerns acute lymphoblastic leukaemia, which is the most common childhood cancer.¹⁹⁴
170. A large population-based study found that higher PFAS concentrations in maternal blood during pregnancy were associated with an increased risk of childhood leukaemia.¹⁹⁵ Recent studies show that children with higher PFAS levels at birth have increased odds of developing childhood leukaemia, reinforcing the relevance of early-life exposure as a cancer risk factor.¹⁹⁶
171. Emerging evidence¹⁹⁷ further suggests associations between PFAS exposure and other paediatric cancers, including acute myeloid leukaemia (cancer of the blood and bone marrow), Wilms tumour (a childhood kidney cancer) and retinoblastoma, a rare eye cancer typically diagnosed before age two.¹⁹⁸ These cancers overlap with those identified in the French National Institute of Health and Medical Research (INSERM) 2021 expert report as linked to early exposure to synthetic chemicals, underscoring the plausibility of PFAS as a contributing factor.¹⁹⁹
172. Beyond cancer, PFAS exposure has been consistently associated with impaired development in children.²⁰⁰ According to the US NASEM, there is sufficient evidence of an association between PFAS exposure and decreased infant and foetal growth.²⁰¹ As reported by Dr DeWitt, the US NASEM notably identified evidence of decreased

¹⁹³ EWG [report](#) (2022), reported in “Forever chemicals: the persistent effects of perfluoroalkyl and polyfluoroalkyl substances on human health”, *eBioMedicine* (The Lancet Discovery Science), Vol. 92, 2023, Article No. 104627, available at: [https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964\(23\)00372-9/fulltext](https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(23)00372-9/fulltext).

¹⁹⁴ Metayer C, Morimoto LM, Vieira VM, Godri Pollitt KJ, Bartell SM, Wong L, Young TM. Exposure to per- and polyfluoroalkyl substances in residential settled dust and risk of childhood acute lymphoblastic leukemia. *Int J Cancer*. 2025 Jul 1;157(1):103-115. doi: 10.1002/ijc.35370. Epub 2025 Feb 14. PMID: 39950710; PMCID: PMC12062923.

¹⁹⁵ Caron-Beaudoin, É., et al. (2023). Prenatal exposure to PFAS and risk of childhood acute lymphoblastic leukemia: A population-based case–control study. *Environmental Health Perspectives*, 131(4): 047002.

¹⁹⁶ Zhang, H., et al. (2020). Early-life exposure to per- and polyfluoroalkyl substances (PFAS) and risk of childhood acute lymphoblastic leukemia: Evidence from newborn dried blood spots. *Environmental Research*, 182: 109073.

¹⁹⁷ Binczewski NR, Morimoto LM, Wiemels JL, Ma X, Metayer C, Vieira VM. Prenatal exposure to per- and polyfluoroalkyl substances (PFAS) from contaminated water and risk of childhood cancer in California, 2000-2015. *Environ Epidemiol*. 2025 Jan 9;9(1):e365. doi: 10.1097/EE9.0000000000000365. PMID: 39802752; PMCID: PMC11723701.

¹⁹⁸ Dr Grandjean, p. 39.

¹⁹⁹ Scientific synthesis report by the French National Institute of Health and Medical Research (Institut National de la Santé et de la Recherche Médicale) [Pesticides et santé – Nouvelles données \(2021\) · Inserm, La science pour la santé](#) (in French).

²⁰⁰ Ouidir M, Verner MA, Siroux V, Lyon-Caen S, Cissé AH, Botton J, Heude B, Valmary-Degano S, Haug LS, Thomsen C, Bayat S, Slama R, Philippat C. PFAS exposures and child growth: a longitudinal study from fetal life to early childhood. *Environ Res*. 2025 Aug 15;279(Pt 2):121814. doi: 10.1016/j.envres.2025.121814. Epub 2025 May 9. PMID: 40350015.

²⁰¹ National Academies of Sciences, Engineering, and Medicine. (2022). *Guidance on PFAS Exposure, Testing, and Clinical Follow-Up*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26156>.

antibody responses and dyslipidaemia,²⁰² as well as liver enzyme alterations, indicating multiple developmental and physiological effects.²⁰³

173. A number of studies have focused on the link between early life exposure to PFAS and neurodevelopment. Their findings show that PFAS exposure is associated with delays in early cognitive, motor, and language development, as well as later difficulties in executive function, attention, learning and behaviour, including ADHD-related symptoms and autism-spectrum-related traits.²⁰⁴ A 2023 study from the University of Southern Denmark (SDU) and Odense Child Cohort showed a correlation between exposure to PFAS as a foetus and lower intelligence quotient (IQ) at the age of seven.²⁰⁵
174. There is epidemiological data pointing to an increased risk of childhood infections after PFAS exposure, particularly in association with prenatal PFAS exposures.²⁰⁶ Children's developing immune systems are particularly vulnerable. The US EPA identifies children exposed during critical developmental windows as being susceptible to PFAS-induced immune suppression.²⁰⁷ The US NASEM found sufficient evidence of reduced antibody responses in both adults and children.²⁰⁸ Of particular concern is the diminished vaccine response observed in PFAS-exposed children, with studies reporting reduced antibody concentrations following measles, diphtheria, and tetanus vaccinations.²⁰⁹
175. Dr Grandjean points out that increased PFAS levels in children have been linked to higher rates of infectious diseases, including common colds, gastroenteritis, and pneumonia, as well as to increased hospitalisations.²¹⁰
176. Finally, PFAS exposure has been associated with a wider range of adverse metabolic and endocrine outcomes in children, including increased risk of impaired glucose homeostasis, excess weight, and diabetes, with evidence supporting a causal link between PFAS exposure and metabolic dysfunction.²¹¹

²⁰² Designates the medical term for abnormal levels of lipids (fats) in the blood.

²⁰³ Dr DeWitt, p. 32.

²⁰⁴ Carrizosa C, et al. Prenatal perfluoroalkyl substance exposure and neuropsychological development throughout childhood: the INMA Project. *J Hazard Mater.* 2021;416:125185; Harris MH, et al. Prenatal and childhood exposure to per- and polyfluoroalkyl substances (PFASs) and child cognition. *Environ Int.* 2018;115:358–69.

²⁰⁵ Beck IH, Bilenberg N, Möller S, Nielsen F, Grandjean P, Højsager FD, Halldorsson TI, Nielsen C, Jensen TK. Association Between Prenatal and Early Postnatal Exposure to Perfluoroalkyl Substances and IQ Score in 7-Year-Old Children From the Odense Child Cohort. *Am J Epidemiol.* 2023 Sep 1;192(9):1522-1535. doi: 10.1093/aje/kwad110. PMID: 37119029.

²⁰⁶ H. von Holst, P. Nayak, Z. Dembek, S. Buehler, D. Echeverria, D. Fallacara, L. John, Perfluoroalkyl substances exposure and immunity, allergic response, infection, and asthma in children: review of epidemiologic studies.

²⁰⁷ U.S. Environmental Protection Agency (EPA). (2021). *Draft Toxicological Review of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)*. Office of Research and Development, Washington, DC.

²⁰⁸ National Academies of Sciences, Engineering, and Medicine. (2022). *Guidance on PFAS Exposure, Testing, and Clinical Follow-Up*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26156>.

²⁰⁹ Editorial: [Forever chemicals: the persistent effects of perfluoroalkyl and polyfluoroalkyl substances on human health](#) Forever chemicals: the persistent effects of perfluoroalkyl and polyfluoroalkyl substances on human health", *eBioMedicine* (The Lancet Discovery Science), Vol. 92, 2023, Article No. 104627, available at: [https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964\(23\)00372-9/fulltext](https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(23)00372-9/fulltext).

²¹⁰ Dr Grandjean, pp. 35-37.

²¹¹ Dr Grandjean, p. 43.

2.4.4 Conclusions as to PFAS impacts on human health

177. It is clearly established that:

- PFAS are present in all human bodies;
- There are no widespread effective treatments for PFAS exposure in humans;
- PFAS exposure is linked to serious, well-documented and wide-ranging harms to human health, in particular to vulnerable groups such as children;
- Even low levels of PFAS are dangerous;
- PFAS are hazardous in combination and by virtue of the fact that they accumulate, compounding their long-term effects; and
- The full extent of PFAS toxicity is potentially unknowable due to the multitude of cumulative effects of various PFAS in the body. This remains an area of active research.

Part III: Statement of Facts – PFAS Pollution and Exposure Across Belgium and the Response to it

178. This section provides an overview of PFAS pollution in Belgium, dealing in turn with the major sources and contamination “hotspots”, the adverse impacts on environmental and human health, biomonitoring of exposure to PFAS, measures taken by the Belgian authorities in respect of PFAS, the current legal and policy frameworks, and the costs of PFAS pollution and remediation. This section focuses mainly on the situation after 1 May 2004, the date when the Charter entered into force in respect of Belgium.

179. Belgium is the third most densely populated country in the European Union and one of the most densely populated countries in all of Europe,²¹² with around 11.8 million inhabitants in an area of approximately 30,000 km². It is divided into three regions: Flanders (with 45% of the territory and 58% of the population); Wallonia (with 55% of the territory and 31 % of the population); and Brussels (covering around 0.5 % of the territory and approximately 11% of the population). There are four levels of government – federal, regional, provincial (in Flanders and Wallonia only) and municipal – with various responsibilities for governing different sectors and issues. Belgium’s linguistic communities (Dutch, French, and German) also have powers and responsibilities, including certain aspects of preventive and curative medicine. The matters raised in this complaint touch on competencies ranging across these levels of government.

3.1 The sources of PFAS

180. The chemical industry has historically been one of the most prominent industries in Belgium. Belgium is the second largest exporting country for chemicals and pharmaceuticals within the European Union and the fifth such country globally.²¹³

²¹²The Facts Institute, *Europe Population Density (2026)*. Available at: [Europe Population Density \(2026\) - The Facts Institute](#).

²¹³ Industry association webpage presenting an overview of the chemical sector in Belgium: <https://cefic.org/landscape-of-the-industry/belgium/>.

181. **Production of PFAS:** Belgium's PFAS market is significant. For example, the American multinational conglomerate 3M Company (3M) produced PFAS at its manufacturing site in Zwijndrecht, in Flanders, from 1971 until 2024.²¹⁴
182. Although 3M has ceased PFAS production in Belgium, this has not resulted in an overall reduction of PFAS pollution. Imported PFAS continue to be widely used to make products in Belgium. According to 2025 government data, Belgian industry continues to import over 8,000 tonnes of PFAS per year for uses in medical devices, textiles, cooling and heating systems, and other applications.²¹⁵ These imports have not only persisted but are likely to increase to compensate for any local supply gap, meaning PFAS use remains substantial regardless of local production. Notably, demand from the textile sector is expected to grow further.²¹⁶
183. **Manufacturing with PFAS:** Other industrial sites across Belgium host companies which use PFAS to manufacture a range of products.²¹⁷ For example, PFAS is used at Chemours' site in the city of Mechelen as part of the production of coatings and fluoropolymer-based products.²¹⁸ The Belgian government estimates that 8,330 tonnes of PFAS are used in Belgium annually, with a higher share of polymeric PFAS, used by various industries such as plastics production, paints and coatings, medical devices, batteries, or textiles.²¹⁹ Three sectors in particular – medical; textiles, upholstery, leather, apparel, and carpets (TULAC); and heating, ventilation, air conditioning and refrigeration (HVACR) – constitute more than 75% of all the estimated PFAS volume used in Belgium.²²⁰ Studies continue to be conducted to identify which companies are using PFAS in their manufacturing processes.
184. **Products containing PFAS:** Companies and public bodies use products containing PFAS, for example, at military sites or fire stations. The use of PFAS in pesticides has also been on the rise in Belgium over the past few years. According to the latest Belgian government market study of PFAS, Belgium is among the European countries that use the most pesticides, with more than 7 kg/ha.²²¹ At the beginning of 2024, 32 active substances in pesticides on the Belgian market contained PFAS.²²² A series of four studies conducted by the Belgian NGO Nature & Progrès shows that compared to other neighbouring countries such as France, Belgium uses twice as many pesticides,

²¹⁴ Corporate webpage providing information on PFAS-related activities and environmental response measures linked to the 3M site in Zwijndrecht: <https://pfas.3m.com/zwijndrecht> (in Dutch).

²¹⁵ The Brussels Times, *Belgium still imports 8,000 tonnes of PFAS per year*. Available at: "[Belgium still imports 8,000 tonnes of PFAS per year](#)", The Brussels Time, 2 September 2025.

²¹⁶ [Annex XV report](#) on the EU proposal for a universal PFAS restriction, p. 58.

²¹⁷ Government-commissioned study analysing the use, production, and industrial applications of PFAS in Belgium: <https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf>.

²¹⁸ Corporate webpage describing Chemours' industrial presence in Belgium : <https://www.chemours.com/en/about-chemours/global-reach/belgium>.

²¹⁹ Government-commissioned study analysing the use, production, and industrial applications of PFAS in Belgium: <https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf>.

²²⁰ Ibid, p. 76.

²²¹ Government-commissioned study analysing the use, production, and industrial applications of PFAS in Belgium: <https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf>, p. 57.

²²² Official Belgian regulatory database page explaining the presence of PFAS-related active substances in plant protection products: <https://fytoweb.be/en/plant-protection-products/use/pfas#:~:text=At%20the%20beginning%20of%202024,active%20substances%20with%20their%20structure>).

including those containing PFAS.²²³ Their latest research projects reveal a striking increase in the presence of TFA, a dangerous degradation product of PFAS, in Belgian surface waters, drinking water and, more recently, wine.²²⁴ A 2021 report from Pesticides Action Network, another NGO, shows that the samples of domestically grown fruit and vegetables with the highest rate of PFAS contamination in Europe (27%) came from Belgium and the Netherlands.²²⁵

185. The use of PFAS in various products, some of them directly available to Belgian residents such as cookware, cosmetics, food, and food packaging, is generally considered to be a major source of PFAS exposure in Belgium. Dietary exposure to PFAS in particular – the subject of State-funded reports since 2012²²⁶ – is considered widespread in Belgium.²²⁷ A 2024 analysis of 268 food products from the Belgian market demonstrated that 43% of samples contained at least one PFAS, with a maximum of 11 PFAS measured in a wild pork stew.²²⁸ A 2025 study from the consumer-rights NGO Testachats shows that 68 out of 229 everyday products in Belgium contain PFAS.²²⁹ Comparing the PFAS levels measured in these different samples with the “tolerable intake” of PFAS proposed by EFSA, namely 0.63 ng/kg/day for the combination of PFOA, PFNA, PFHxS, and PFOS, shows that consuming one portion (200g) of many fish or seafood samples, or two meat samples, is enough to exceed the daily amount for a 70-kg individual.²³⁰ As early as 2008, EFSA concluded that food is the main source of human exposure to PFOA and PFOS.²³¹
186. **PFAS emitted during waste treatment:** Finally, PFAS in the environment in Belgium have been detected in air emissions from waste incineration facilities, including at the Indaver plant in Antwerp (Flanders) as part of methodological research into standardised PFAS emission monitoring.²³² A similar connection has been flagged in Limburg

²²³ NGO information page presenting advocacy activities on PFAS contamination: <https://www.natpro.be/campagnes/pfas/> (in French).

²²⁴ On water contamination from TFA: <https://www.natpro.be/actus/pesticides/contamination-generalisee-de-leau-par-le-tfa-un-produit-de-degradation-a-vie-non-reglemente-des-pesticides-pfas/> (in French); and on wine: <https://www.natpro.be/wp-content/uploads/2025/04/Vin-TFA-Etude-Fr.pdf>.

²²⁵ NGO report documenting the presence of PFAS-based pesticides in fruit and vegetable production in Europe: <https://www.pan-europe.info/resources/reports/2024/02/toxic-harvest-rise-forever-pfas-pesticides-fruit-and-vegetables-europe>.

²²⁶ See studies mentioned in the timeline in Annex F.

²²⁷ Sciensano, Final public report, RT 21/6350 FLUOREX Exposure assessment of perfluoroalkyl substances as follow-up on the concerns raised in the recent opinion of EFSA: https://www.sciensano.be/sites/default/files/fluorex_public_report.pdf.

²²⁸ Van Leeuw V, Malysheva SV, Fosseprez G, et al. Per- and polyfluoroalkyl substances in food and beverages: determination by LC-HRMS and occurrence in products from the Belgian market. *Chemosphere* 2024; 366:143543: https://www.sciensano.be/sites/default/files/van_leeuw_et_al_2024_pfas.pdf. see also: https://www.hbm4eu.eu/wp-content/uploads/2021/11/Factsheet_PFAS.pdf.

²²⁹ News report summarising findings that PFAS were detected in a majority of tested consumer products in Belgium: <https://www.brusselstimes.com/1495181/pfas-forever-chemicals-found-in-68-of-229-everyday-products-in-belgium>.

²³⁰ Academic review discussing PFAS as emerging pollutants of concern: <https://orbi.uliege.be/bitstream/2268/329325/1/PFAS%2c%20polluants%20au%20coeur%20de%20l%27actualit%c3%a9.pdf> (in French).

²³¹ European Food Safety Authority (EFSA). Perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and their salts Scientific Opinion of the Panel on Contaminants in the Food chain. *EFSA J.* 2008 Jul 21;6(7):653. doi: 10.2903/j.efsa.2008.653. PMID: 37213838; PMCID: PMC10193653.

²³² Jelle Hofman, Griet Jacobs, Bart Baeyens, Aline Reis De Carvalho, Wim Aerts, Stefan Voorspoels, Gill Van den Bergh, Masha Van Deun, Patrick Berghmans, Andres Van Brecht, Gert Otten, Quantifying per- and polyfluoroalkyl substances (PFAS) in air emissions: Lab & field experiences from a hazardous

(Flanders), where a study by Toxicowatch found high levels of PFAS in eggs at two poultry sites in Beringen, with the highest levels recorded 2,900 metres from the Bionerga refuse incinerator. While the study stops short of establishing a causal link and further investigation has been recommended, it suggests the incinerator as a possible source. The company denies allegations that their furnaces operate at a too low temperature and that their combustion gas purification system is inefficient.²³³ A 2022 study found various PFAS compounds in Belgian municipal wastewater entering treatment plants in some of the most populated areas in Flanders.²³⁴ The use of sewage sludge from wastewater treatment as a fertilizer is also a documented source of PFAS in the Belgian environment.²³⁵

3.2 The presence of PFAS in Belgium and its adverse impacts on the environment

187. In recent years, Belgium has been described as “home to the highest levels of PFAS pollution”, with the environment in all three regions of Belgium contaminated.²³⁶
188. In her expert report, Dr DeWitt found that “[l]evels of PFAS pollution in environmental media sampled across Belgium are among the highest reported for any country to date”.²³⁷
189. In its 2026 submissions to the thematic report on forever chemicals and human rights by the United Nations Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes (hereinafter referred to as “UN Special Rapporteur on toxics”), Belgium acknowledged that: “Monitoring campaigns conducted by Belgium’s three regions confirm the widespread presence of PFAS in the environment”.²³⁸
190. PFAS contamination has been detected in soil, surface water, groundwater, and air, with particularly high concentrations identified in areas located near industrial facilities, fire-training grounds, landfills, and waste incineration sites.²³⁹ As explained in Part II, the

waste incinerator, Environment International, Volume 200,2025,
<https://www.sciencedirect.com/science/article/pii/S0160412025002922>.

²³³ The Brussels Times, *High levels of PFAS found in eggs in Limburg province*:
<https://www.brusselstimes.com/791010/high-levels-of-pfas-found-in-eggs-in-limburg-province>.

²³⁴ Jeong, Yunsun and Da Silva, Katyeny Manuela and Iturrospe, Elias and Fujii, Yukiko and Boogaerts, Tim and van Nuijs, Alexander L.N. and Koelmel, Jeremy P. and Covaci, Adrian, *Occurrence and Contamination Profile of Legacy and Emerging Per- and Polyfluoroalkyl Substances (Pfas) in Belgian Wastewater Using Target, Suspect and Non-Target Screening Approaches*. Available at SSRN: <https://ssrn.com/abstract=4081210> or <http://dx.doi.org/10.2139/ssrn.4081210>.

²³⁵ RTBF Actus, *“Investigation: Sewage Sludge Spread on Our Fields—‘We Know It Is Not 100% Clean, but We Let It Pass’”* (in French): <https://www.rtb.be/article/investigation-des-boues-d-epuration-epandues-sur-nos-champs-on-sait-qu-elles-ne-sont-pas-100-clean-mais-on-laisse-pisser-11389349>. A study mandated by the Walloon government confirmed the presence of PFAS in sewage sludge: https://www.issep.be/wp-content/uploads/Caribouh_Resume-pour-site-internet.pdf (in French).

²³⁶ The Guardian, *Revealed: scale of ‘forever chemical’ pollution across UK and Europe*. Available at: [Revealed: scale of ‘forever chemical’ pollution across UK and Europe | PFAS | The Guardian](https://www.theguardian.com/environment/2024/apr/16/forever-chemical-pollution-uk-europe); [Belgium has world’s highest ‘forever chemical’ pollution](https://www.theguardian.com/environment/2024/apr/16/forever-chemical-pollution-belgium).

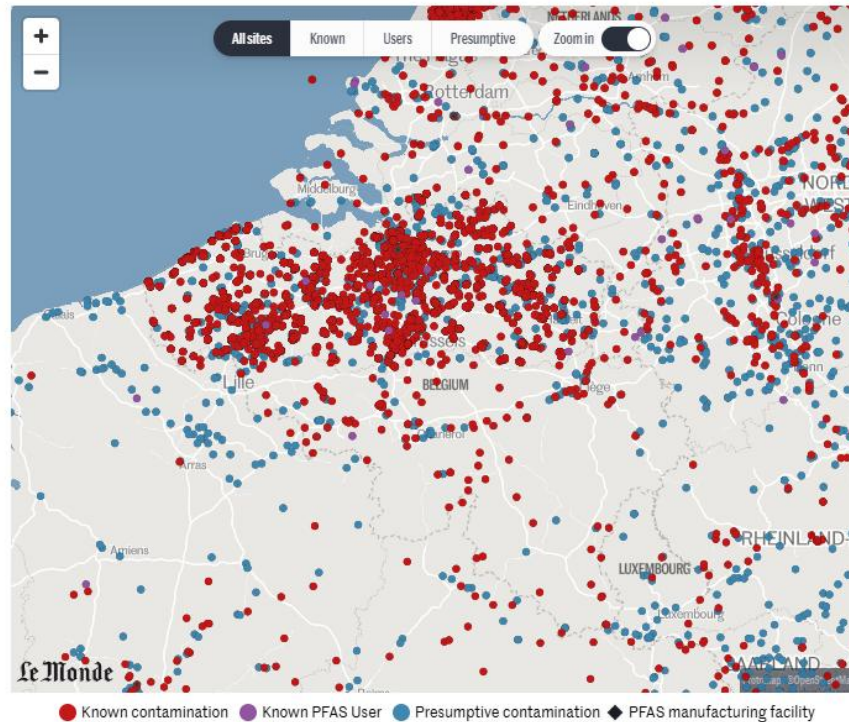
²³⁷ Dr DeWitt, p.4.

²³⁸ Input [OHCHR | Call for Input - Forever Chemicals \(PFAS\) & Human Rights](#).

²³⁹ Cordner A, Brown P, Cousins IT, Scheringer M, Martinon L, Dagorn G, Aubert R, Hosea L, Salvidge R, Felke C, Tausche N, Drepper D, Liva G, Tudela A, Delgado A, Salvatore D, Pilz S, Horel S. PFAS Contamination in Europe: Generating Knowledge and Mapping Known and Likely Contamination with “Expert-Reviewed” Journalism. *Environ Sci Technol*. 2024 Apr 16;58(15):6616-6627. doi: 10.1021/acs.est.3c09746. Epub 2024 Apr 3. PMID: 38569050.

persistence, mobility, and bioaccumulative properties of PFAS mean that once they are released into the environment, these substances can travel long distances and remain present for decades.

191. This extensive pollution can be visualised clearly through *Le Monde's* Forever Pollution mapping of the situation in Belgium, as shown below.²⁴⁰ Further mapping has been conducted in each Belgian region: in Brussels,²⁴¹ Flanders,²⁴² and Wallonia.²⁴³



Source: Forever Pollution Project

Figure 4. Screenshot from interactive *Le Monde's* Forever Pollution mapping of the situation in Belgium (Dark red = > 10,000 ng/kg, Red = 1000.1-10,000 ng/kg, Light red = 100.1-1000 ng/kg, Pink = 0-100 ng/kg)

192. As noted by Dr DeWitt in her expert report:

²⁴⁰ *Le Monde's Forever Pollution Project* is a collaborative project between the French newspaper *Le Monde* and several newsrooms across Europe, aiming to document and map PFAS contamination across Europe. Forever Pollution Project's map was last updated on 6 November 2023. An updated and enhanced version of the data was built by the PFAS Data Hub project at the French National Centre for Scientific Research: <https://foreverpollution.eu/map/>.

²⁴¹ Geodata environment brussels. *PFAS : Analyse et suspicion de pollution*. Available at : <https://geodata.environment.brussels/client/view/13e9e42d-6172-4255-a925-a61cbb14a695>.

²⁴² Vlaanderen. *Maatregelen per gemeente*. Available at: <https://www.vlaanderen.be/pfas-vervuiling/maatregelen-per-gemeente#sb-pfas-kaart-vlaanderen-ae44a01b-d83e-4403-9161-4d2616917c33>.

²⁴³ RTBF Actus, "Polluants éternels" en Wallonie et à Bruxelles : découvrez la carte inédite de la contamination par les PFAS. Available at : <https://www.rtbf.be/article/polluants-eternels-en-wallonie-et-a-bruxelles-decouvrez-la-carte-inedite-de-la-contamination-par-les-pfas-11281703>.

[e]ven a superficial look at this map indicates that in a majority of known sites of contamination, PFAS levels are at or above 1000 ng/kg or 10,000 ng/kg, with highest levels being reported in soils.²⁴⁴

193. An investigation by the RTBF (Belgian's French-language public broadcaster) following the Forever Pollution Project's methodology shows that there are over 335 PFAS-contaminated sites – where PFAS levels are equal or above 10ng/L – in Wallonia and Brussels. This number comprises 36 known contamination “hotspots” considered to pose an immediate risk to residents' health.²⁴⁵
194. The most prominent example of a contaminated site is in the vicinity of the 3M production plant in Zwijndrecht, Flanders, where exceptionally high concentrations of PFAS were detected in soil, groundwater and air during the so-called “3M pollution scandal”.²⁴⁶ In 2024, an academic study of 88 private gardens around the 3M site in Zwijndrecht found PFAS contamination in all soil layers and crops, including emerging and precursor compounds traceable to the factory.²⁴⁷ A study by VITO (the Flemish Institute for Technological Research) sampling PFAS in air across Flanders further noted elevated PFAS concentrations in the air around this particular site, as well as other sampled locations.²⁴⁸
195. Subsequent monitoring confirmed that PFAS occur not only at clearly contaminated sites but pervasively at locations across Flanders. In 2022, VMM (the Flemish Environment Agency) published an exploratory survey of pollution in shallow groundwater, reporting PFAS in roughly 170 of 194 monitored sites across the whole Flanders region.²⁴⁹ VMM found that around 40% of the measured locations exceeded some of the stricter PFAS standards that VMM describes as relevant to the protection of human health.²⁵⁰ In 2024, following a region-wide campaign of groundwater wells launched by OVAM (the Flemish public waste agency) and VMM, PFAS were found in 88% of groundwater samples – with PFOA and PFOS reported, respectively, in 49% and 34% of the samples, at levels

²⁴⁴ Dr DeWitt, p.43.

²⁴⁵ RBTF Actus, *"Polluants éternels" en Wallonie et à Bruxelles : découvrez la carte inédite de la contamination par les PFAS* : <https://www.rtb.be/article/polluants-eteruels-en-wallonie-et-a-bruxelles-decouvrez-la-carte-inedite-de-la-contamination-par-les-pfas-11281703>.

²⁴⁶ OVAM, *PFAS-vervuiling*. Available at: <https://ovam.vlaanderen.be/pfas-vervuiling> (in Dutch).

²⁴⁷ Lasters R, Groffen T, Eens M, Bervoets L. Dynamic spatiotemporal changes of per- and polyfluoroalkyl substances (PFAS) in soil and eggs of private gardens at different distances from a fluorochemical plant. *Environ Pollut*. 2024 Apr 1;346:123613. doi: 10.1016/j.envpol.2024.123613. Epub 2024 Feb 27. PMID: 38423274.

²⁴⁸ Peters et al., Exploratory study into PFAS in ambient air and deposits in Flanders, 2024, https://assets.vlaanderen.be/image/upload/v1727868126/Verkennd Onderzoek naar PFAS in omgevingslucht in Vlaanderen_o7fxbh.pdf (in Dutch).

²⁴⁹ SAMEN MAKEN WE MORGEN MOOIER (OVAM), *PFAS-vervuiling*. Available at: <https://vmm.vlaanderen.be/publicaties/orienterend-onderzoek-naar-diffuse-verspreiding-van-pfas-in-het-freatisch-grondwater-in-vlaanderen-2022>.

²⁵⁰ 39% of the locations exceeded a standard of 4ng/l for 4 PFAS, while 46% exceeded a standard for all PFAS at 4,4ng/l.

high enough to be quantified.²⁵¹ PFAS have also been found in Flanders' drinking water.²⁵²

196. A 2026 report issued by Belgium's Federal Public Service (i.e. federal ministry) for Health, Food Chain Safety, and the Environment provides a broader assessment of potential PFAS exposure.²⁵³ It estimates that in Flanders, 65,153 sites have been classified as high-risk, with an estimated 13.7% confirmed contamination rate, corresponding to approximately 8,912 hotspots (including 94 fire-related locations). In Brussels, 2,866 sites are identified as high-risk, with 200 considered very high-risk, while in Wallonia 456 sites are listed, although the register remains incomplete and is being continuously updated. Unlike the mapping data above, these figures reflect precautionary risk assessments rather than confirmed contamination, highlighting a significantly wider potential footprint of PFAS pollution across Belgium.
197. The PFAS map displayed on the Flemish government's website (see below) shows sites of PFAS pollution where contamination has been monitored and recommendations issued to residents. This shows how widespread contamination is in Flanders.²⁵⁴



Figure 5. Screenshot from interactive “PFAS Pollution in Flanders” website, showing sites of PFAS pollution.²⁵⁵

198. Following three measurement campaigns, carried out in 2021, 2022, and 2023, Bruxelles Environnement, the regional environment agency in Brussels, set up a map

²⁵¹ OVAM, Bepalen van Streefwaarden voor PFAS in Grond en Grondwater. Available at: https://ovam.vlaanderen.be/c/document_library/get_file?uuid=44ba79ed-4206-052a-e075-a7474bca0e83&groupId=177281.

²⁵² Report by Arche Consulting, mandated by VMM, *Kwaliteit van het drinkwater 2022* (in Dutch), pp. 107 – 120; Cappelli et al., Occurrence of short- and ultra-short chain PFAS in drinking water from Flanders (Belgium) and implications for human exposure, *Environmental Research*, Volume 260, 2024, 119753.

²⁵³ Federal Public Service (federal ministry) Health, Food Chain Safety and Environment (Belgium), *Financing mechanism for PFAS contamination – Final report (2026): Mécanisme de financement - pollution aux PFAS - rapport 2026 | SPF Santé publique* (report only in Dutch).

²⁵⁴ Vlaanderen. *Maatregelen per gemeente*: <https://www.vlaanderen.be/pfas-vervuiling/maatregelen-per-gemeente#sb-pfas-kaart-vlaanderen-ae44a01b-d83e-4403-9161-4d2616917c33> (in Dutch).

²⁵⁵ Vlaanderen. *Maatregelen per gemeente*: <https://www.vlaanderen.be/pfas-vervuiling/maatregelen-per-gemeente#sb-pfas-kaart-vlaanderen-ae44a01b-d83e-4403-9161-4d2616917c33>. Webshot from 23.02.2026.

(see below) showing that multiple locations in the region are suspected to be at very high (in red) or high risk (in amber) of PFAS contamination.²⁵⁶

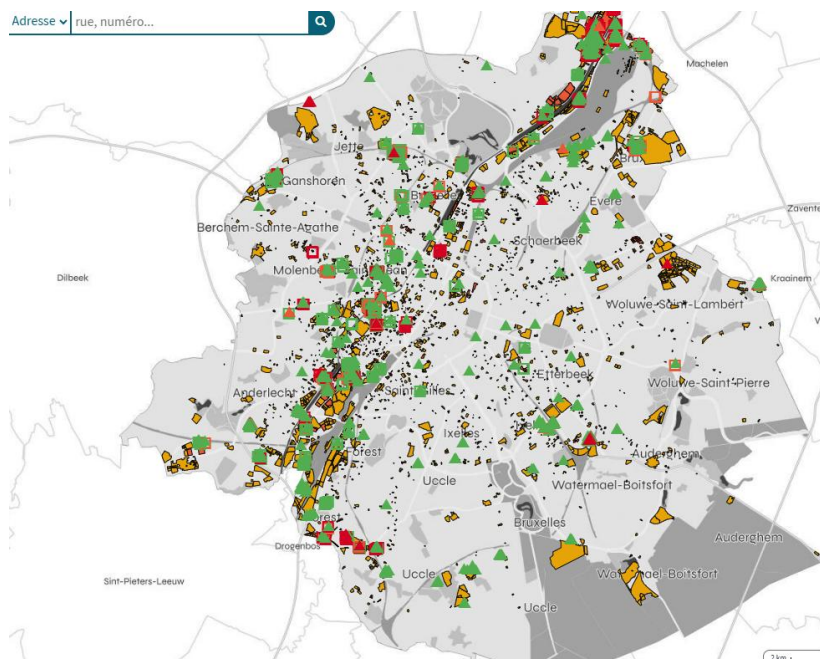


Figure 6. Screenshot from interactive “Bruxelles Environnement” website, showing sites of PFAS pollution.

199. Beyond contaminated sites, PFAS have spread across Belgian territory through contaminated water and soil,²⁵⁷ with effects observed on chickens²⁵⁸ and other birds,²⁵⁹ as well as fruits, vegetables, and compost.²⁶⁰ PFAS have also been found in the marine environment along the Belgian North Sea coast, where they may contribute to broader transboundary pollution issues and affect marine species.²⁶¹ The Belgian Meuse river

²⁵⁶ Official interactive platform displaying spatial data on PFAS contamination in soils and groundwater in Brussels: <https://geodata.environnement.brussels/client/view/13e9e42d-6172-4255-a925-a61cbb14a695>.

²⁵⁷ Bonso M, Cappelli F, Simon F, Vorkamp K, Six L, Niarchos G, Covaci A, Bervoets L, Groffen T. Per- and polyfluorinated alkyl substances (PFAS) in the Scheldt Estuary: Insights from target, suspect and non-target screening of water, sediment and bivalves. *Environ Pollut*. 2026 Jan 1;388:127349. doi: 10.1016/j.envpol.2025.127349. Epub 2025 Nov 4. PMID: 41197895.

²⁵⁸ El Amraoui Aarab, C., Murphy, A., Guillaume, *et al.* (2026). Bioaccumulation, distribution and depuration of PFAS in chickens from a contaminated region. *Chemosphere*, 405, 144951.

²⁵⁹ Buytaert, Jodie and Eens, Marcel and Bervoets, Lieven and Groffen, Thimo, Distribution of Legacy and Emerging Pfas in a Simplified Terrestrial Food Chain Located Near a Fluorochemical Manufacturing Facility in Belgium. Available at SSRN: <https://ssrn.com/abstract=5081721> or <http://dx.doi.org/10.2139/ssrn.5081721>.

²⁶⁰ Buytaert J, Cox B, Groffen T, Lasters R, Bervoets L, Den Hond E, Voorspoels S, Bruckers L, Larebeke NV, Schoeters G, Eens M, Coertjens D, Colles A. From Soil to Serum: Matrix-Specific Per- and Polyfluoroalkyl Substance Accumulation and Potentially Associated Environmental Exposure Determinants in Teenagers Residing near an Industrial Hotspot. *Toxics*. 2026 Apr 24;14(5):360. doi: 10.3390/toxics14050360. PMID: 42198486; PMCID: PMC13211272.

²⁶¹ Cara B, Lies T, Thimo G, Robin L, Lieven B. Bioaccumulation and trophic transfer of perfluorinated alkyl substances (PFAS) in marine biota from the Belgian North Sea: Distribution and human health risk implications. *Environ Pollut*. 2022 Oct 15;311:119907. doi: 10.1016/j.envpol.2022.119907. Epub 2022 Aug 16. PMID: 35985433.

is the third most TFA-contaminated river in Europe, with levels of 2,500 ng/L.²⁶² More generally, TFA concentrations measured in Flemish drinking water basins are considered as the highest in Europe to date – pesticides being the main identified source of contamination.²⁶³

200. Agricultural areas located near contamination sources have also been particularly affected, with evidence of PFAS uptake in livestock²⁶⁴ and crops.²⁶⁵ The Belgian food safety authority AFSCA detected elevated PFAS concentrations in meat from livestock raised in Stabroek, near the port of Antwerp, where multiple PFAS pollution sources have been identified, prompting restrictions on meat sales from the affected farm.²⁶⁶ Flemish media reported that agricultural companies around the 3M site experienced financial damage as a result of the measures put in place when the pollution became public.²⁶⁷ Homegrown crops have also been contaminated.²⁶⁸
201. As early as 2015, research on PFAS in food such as cereals, salt, sweets, and fruit showed that among targeted EU countries, the highest levels and detection frequencies were observed in Belgium.²⁶⁹
202. The presence of PFAS in Belgium therefore reflects a combination of historical emissions, ongoing industrial and agricultural uses, diffuse sources and inadequate removal during waste and wastewater treatment processes. The resulting environmental burden is both widespread and persistent, requiring long-term monitoring and remediation efforts.

²⁶² PAN Europe & Nature & Progrès (2024). *Étude TFA – Contamination des eaux de surface et souterraines en Europe*. Mai 2024, 27, <https://www.natpro.be/wp-content/uploads/2024/05/Etude-TFA-MAI-2024.pdf>.

²⁶³ VRT NWS (2024). *TFA, an ultra-short-chain PFAS, detected in drinking water*, 23 October 2024, <https://www.vrt.be/vrtnws/nl/2024/10/23/tfa-ultrakorte-keten-pfas-in-drinkwater/>; <https://www.pan-europe.info/press-releases/2024/11/high-concentrations-tfa-drinking-water-call-ban-pfas-containing-pesticides>.

²⁶⁴ Announcement on continued monitoring by the Belgian food safety authority in response to PFAS contamination <https://favv-afscs.be/fr/publication/contamination-environnementale-aux-pfas-lafscs-poursuit-son-programme-de-controle-general-et-le> (in French).

²⁶⁵ PAN Europe & Nature & Progrès (2024). *Récolte toxique : Pesticides PFAS dans nos champs et dans nos assiettes* <https://www.natpro.be/wp-content/uploads/2024/03/recolte-toxique-pfas-etude.pdf> (in French).

²⁶⁶ La libre, *PFAS pollution: meat production at a farm in Stabroek restricted after PFAS discovery*. Available at <https://www.lalibre.be/planete/sante/2024/05/02/pollution-aux-pfas-la-production-de-viande-dune-ferme-de-stabroek-restreinte-apres-la-decouverte-de-pfas-2RGJKA4KFREWZETY2LGPDYZWCE/>. (In French)

²⁶⁷ News report on Belgium's approach to PFAS contamination from agriculture <https://www.agroberichtenbuitenland.nl/actueel/nieuws/2025/10/01/belgie-aanpak-pfas-vervuiling-door-landbouw-vraagt-om-innovatieve-oplossingen> (in Dutch).

²⁶⁸ Lasters R, Groffen T, Eens M, Bervoets L. Per- and polyfluoroalkyl substances (PFAS) in homegrown crops: Accumulation and human risk assessment. *Chemosphere*. 2024 Sep;364:143208. doi: 10.1016/j.chemosphere.2024.143208. Epub 2024 Aug 28. PMID: 39214403.

²⁶⁹ D'Hollander, W., Herzke, D., Huber, S., Hajslova, J., Pulkrabova, J., Brambilla, G., De Filippis, S.P., Bervoets, L., & de Voogt, P. (2015). *Occurrence of perfluorinated alkylated substances in cereals, salt, sweets and fruit items collected in four European countries*. *Chemosphere*, 129, 179–185. <https://www.sciencedirect.com/science/article/abs/pii/S0045653514011825>.

203. The cost of fully cleaning up Belgian territory is estimated between €2.5 billion and €40 billion over a 20-year period, depending on the ambition of the clean-up.²⁷⁰ Soil remediation in particular represents an enormous financial cost.
204. Adding together all societal costs (i.e. healthcare costs, monitoring, remediation of pollution, etc.), a federal report on PFAS financing published on 13 May 2026 estimates a total cost of approximately €3.8 billion per year (i.e. 0.7% of GDP, averaged over 20 years), with the largest share driven by health impacts, particularly premature mortality.²⁷¹ A study published by the European Commission in January 2026 estimates that the annual EU-wide health costs caused by only four types of PFAS (out of some 10,000 which exist),²⁷² amount to around €39.5 billion; a plausible estimate puts them in reality at €600.5 bn.²⁷³

3.3 Government responses to PFAS pollution

205. This section details the response of the Belgian authorities to the accumulation of PFAS pollution in the environment. As set out below, their actions are characterised by:
- Prolonged delay: between the early 2000s – when PFAS contamination at the 3M site was first brought to the attention of the Flemish authorities – until 2021, the measures adopted were manifestly inadequate. For nearly two decades, the authorities confined themselves to limited monitoring of PFAS levels in environmental media and sporadic biomonitoring, primarily in the vicinity of known hotspots, while not taking meaningful action to address the underlying risks.
 - Failure to prevent ongoing emissions and further accumulation: Despite the growing scientific evidence of persistence of PFAS and their accumulation in the environment and human beings, the authorities have failed to adopt effective measures to halt or substantially reduce emissions. To date, no measures have been taken to prevent ongoing emissions or to establish long-term reduction targets.
 - Inadequate action to mitigate exposure from existing PFAS pollution: For completeness, this section provides a detailed overview of the measures adopted in Flanders, Wallonia, and Brussels to address PFAS hotspots and related incidents since 2021. While regional responses differ significantly, they share common shortcomings: they have been delayed, localised, and incomplete, leaving their respective populations insufficiently protected.
206. A detailed timeline of events is provided in Annexes E and F. The graphic below places those events in the broader context of the international development of scientific knowledge concerning PFAS and their adverse effects, illustrating the progressive

²⁷⁰ Investigative news report presenting findings from the *Forever Pollution Project*: <https://www.rtbf.be/article/enquete-100-milliards-d-euros-par-an-a-perpetuite-pour-decontaminer-l-europe-de-tous-les-pfas-11485508> (in French).

²⁷¹ Federal Public Service (federal ministry) Health, Food Chain Safety and Environment (Belgium), *Financing mechanism for PFAS contamination – Final report (2026)* *Mécanisme de financement - pollution aux PFAS - rapport 2026* | *SPF Santé publique* (report only in Dutch).

²⁷² PFOA, PFOS, PFHxS, PFNA.

²⁷³ European Commission: Directorate-General for Environment, WSP, Ricardo and Trinomics, *The cost of PFAS pollution for our society – Final report*, Publications Office of the European Union, 2026, <https://data.europa.eu/doi/10.2779/9590509>.

accumulation of evidence, the increasing awareness of risks by the Belgian authorities, and the significant delay in the adoption of effective protective measures.

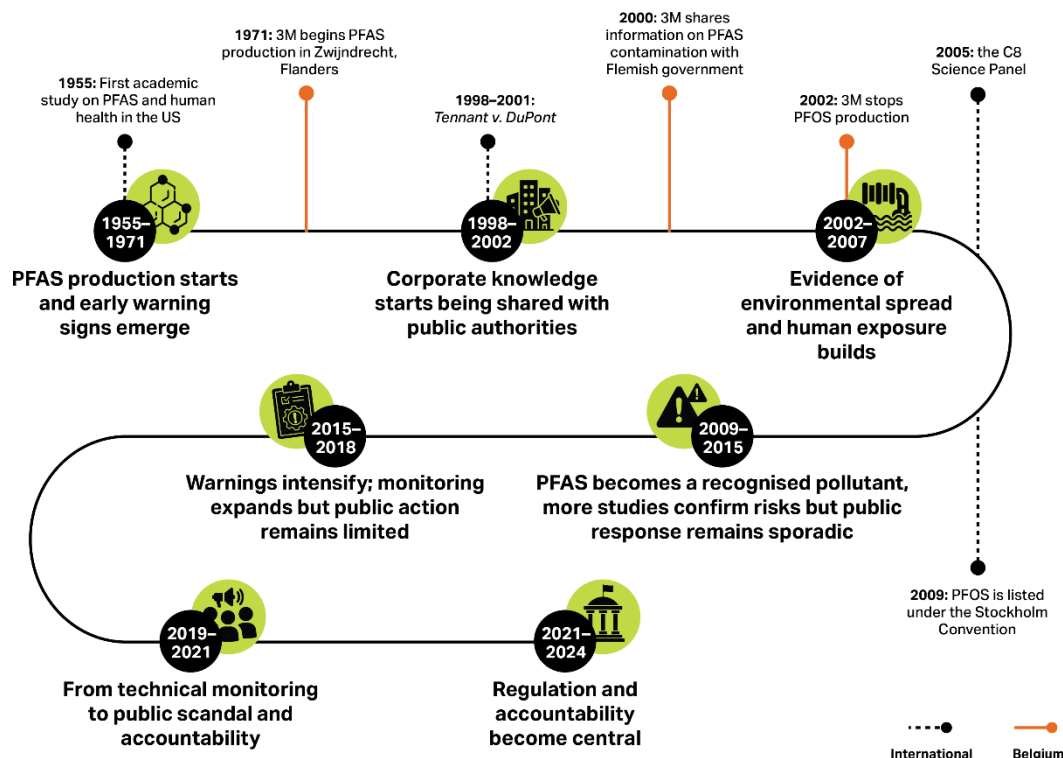


Figure 8. Evolution of scientific knowledge on PFAS and key developments in Belgium and international (1955–2024)

3.3.1 1970s to 2021

207. 3M began PFAS production in Zwijndrecht in the 1970s.²⁷⁴ By 2000–2001, concrete evidence of the problem had emerged: 3M carried out internal assessments, including blood testing of workers showing exposure,²⁷⁵ and environmental measurements revealing extremely high PFOS concentrations – reaching up to 257,000 µg/L – in groundwater around the site.²⁷⁶ At the same time, the company shared technical information with Flemish authorities,²⁷⁷ while scientific findings and media reports began pointing to potential health concerns.²⁷⁸

²⁷⁴ 3M Science Applied to Life. *3M's PFAS-beheer*. Available at : <https://pfas.3m.com/zwijndrecht> (in Dutch).

²⁷⁵ "Employees in Building 3 and Building 16 have an increased risk of PFOS exposure." (translated from Dutch) Mentioned in: "8 feb 2022 Tijdslijn PFOS-problematiek" from the Final Report of the Flemish Parliamentary Inquiry Commission (in Dutch – with English translation found in Annex E).

²⁷⁶ "8 feb 2022 Tijdslijn PFOS-problematiek" from the Final Report of the Flemish Parliamentary Inquiry Commission (in Dutch – with English translation found in Annex E).

²⁷⁷ "8 feb 2022 Tijdslijn PFOS-problematiek" from the Final Report of the Flemish Parliamentary Inquiry Commission (in Dutch – with English translation found in Annex E).

²⁷⁸ On 26 June 2000, newspapers reported a "cancer alarm for carpet spray from Zwijndrecht", and Jos Vets, managing director of the 3M factory, strongly denied that PFOS was carcinogenic: *Gazet van*

208. Between 2002 and 2007, further findings confirmed both the scale of contamination and its spread beyond the industrial site. Scientific studies documented elevated PFAS levels in fish, birds, and other wildlife²⁷⁹ – in some cases, among the highest levels recorded in biota worldwide.²⁸⁰ Soil investigations established that land in Zwijndrecht was heavily contaminated, and biomonitoring studies identified increased PFAS concentrations in residents living near the facility. By this stage, the available evidence compiled in the first Flemish Environment and Health Study (FLEHS) (2002–2006) (see section 3.4.2 below) clearly showed simultaneous environmental contamination and human exposure.
209. Despite such early warnings, since the Charter entered into force in Belgium on 1 May 2004, regulatory responses have remained limited.
210. In 2004, the Flemish Parliament engaged in a debate relating to PFAS pollution, during which the Flemish Minister of Environment, Agriculture, and Development Cooperation, stated:

We have only become aware of perfluorochemicals in the environment in recent years ... it seems more sensible to me to emphasise phasing out the use of these substances than to invest a great deal of time and money in studies that prove what we strongly suspect.²⁸¹

211. The FLEHS programmes monitored the Flemish population's internal exposure to several chemicals, including PFAS, and assessed trends over several periods of time (see section 3.4.2 below). The FLEHS II study included adolescents, adults, and newborns, with participants providing blood and urine samples alongside information on lifestyle and environmental factors. The blood of 199 adolescents aged 14–15 years was sampled for PFOS and PFOA. For this group, PFOS was detected in 100% of samples, highlighting that virtually all adolescents had measurable PFAS exposure. The HBM-I

Antwerpen, 26 juni 2000. Searchable via the digital archive here: <https://www.gva.be/zoeken/>. Note: old articles often require a subscription or may not be fully digitized.

²⁷⁹ Hoff PT, Scheirs J, Van de Vijver K, Van Dongen W, Esmans EL, Blust R, De Coen W. Biochemical effect evaluation of perfluorooctane sulfonic acid-contaminated wood mice (*Apodemus sylvaticus*). *Environ Health Perspect.* 2004 May;112(6):681-6. doi: 10.1289/ehp.6479. PMID: 15121511; PMCID: PMC1241962.

Hoff, P. T.; Van de Vijver, K. I.; Van Dongen, W.; Esmans, E. L.; Blust, R.; De Coen, W. Perfluorooctane sulfonate in bib (*Trisopterus luscus*) and plaice (*Pleuronectes platessa*) from the Western Scheldt and the Belgian North Sea: distribution and biochemical effects. *Environ, Toxicol. Chem.* 2003, 22, 608- 614.; Van de Vijver, K. I.; Hoff, P.; Van Dongen, W.; Esmans, E.; Blust, R.; De Coen, W. Exposure patterns of perfluorooctane sulfonate in aquatic invertebrates from the Western Scheldt estuary and the Southern North Sea. *Environ, Toxicol. Chem.* 2003, 22 (9), 2037-2041.; Van de Vijver, K. I.; Hoff, P. T.; Das, K.; Van Dongen, W.; Esmans, E. L.; Jauniaux, T.; Bouqueneau, J.-M.; Blust, R.; De Coen, W. M. Perfluorinated chemicals infiltrate ocean waters: link between exposure levels and stable isotope ratios in marine mammals. *Environ, Sei. Technol.* 2003, 37, 5545-5550.

²⁸⁰ Lopez-Antia A, Dauwe T, Meyer J, Maes K, Bervoets L, Eens M. High levels of PFOS in eggs of three bird species in the neighbourhood of a fluoro-chemical plant. *Ecotoxicol Environ Saf.* 2017 May;139:165-171. doi: 10.1016/j.ecoenv.2017.01.040. PMID: 28135663.

²⁸¹ Vlaams Parlement, Commissie voor Leefmilieu, Natuurbehoud en Ruimtelijke Ordening, *Handelingen*, Zitting 2003–2004, 18 maart 2004. *Vraag om uitleg van Johan Malcorps aan minister Jef Tavernier over de risico's van perfluorchemicaliën voor milieu en gezondheid*. PDF: <https://docs.vlaamsparlement.be/files/pfile?id=176796>, p. 12. Translated from the Dutch: “We zijn pas de laatste jaren op de hoogte van het voorkomen van perfluorchemicaliën in het milieu. (...) Het lijkt mij verstandiger om in te zetten op het uifaseren van het gebruik van deze stoffen dan om veel tijd en geld te investeren in studies die aantonen wat we sterk vermoeden.”

value was exceeded in 62% and 81% of the participants for PFOS and PFOA, respectively.²⁸²

212. Although the goal of the FLEHS programme was to use and translate the scientific results into policy actions,²⁸³ no policy measure aimed at preventing and mitigating PFAS exposure was adopted.
213. From 2009 to 2012, additional data demonstrated the widespread nature of exposure. Federal food studies identified significant contamination in locally produced eggs, vegetables, and poultry,²⁸⁴ while blood analyses confirmed the presence of PFAS in all tested individuals, with higher levels among those living closest to the 3M site. The study was not publicised until the 2021 Parliamentary inquiry.²⁸⁵
214. In 2009, a BFRISK research project (concerning exposure to flame retardants), commissioned by the Flemish government, looked into the distribution and possible health effects of PFAS (as well as brominated compounds) in Flanders.²⁸⁶ The study confirmed that these pollutants were present in Flemish houses and office dust. Breast milk was identified as the primary exposure route for infants, with levels exceeding dietary intake rates seen in older age groups. During the same period, remediation activities began at the 3M site,²⁸⁷ but these were primarily aimed at containing the spread of contamination rather than removing it, despite known migration into groundwater,²⁸⁸ the Scheldt River, and surrounding residential areas.
215. In the following decade, as detailed in the timeline attached to the complaint (see Annexes E and F), evidence indicated that contamination of PFOS remained present and mobile even years after production of this particular PFAS had ceased in 2002²⁸⁹

²⁸² Colles A, Bruckers L, Den Hond E, Govarts E, Morrens B, Schettgen T, Buekers J, Coertjens D, Nawrot T, Loots I, Nelen V, De Henauw S, Schoeters G, Baeyens W, van Larebeke N. Perfluorinated substances in the Flemish population (Belgium): Levels and determinants of variability in exposure. *Chemosphere*. 2020 Mar;242:125250. doi: 10.1016/j.chemosphere.2019.125250. Epub 2019 Nov 1. PMID: 31896205.

²⁸³ Greet Schoeters, Elly Den Hond, Ann Colles, Ilse Loots, Bert Morrens, Hans Keune, Liesbeth Bruckers, Tim Nawrot, Isabelle Sioen, Sam De Coster, Nicolas Van Larebeke, Vera Nelen, Els Van de Mierop, Jan Vrijens, Kim Croes, Karen Goeyens, Willy Baeyens, Concept of the Flemish human biomonitoring programme, *International Journal of Hygiene and Environmental Health*, Volume 215, Issue 2, 2012, Pages 102-108, ISSN 1438-4639, <https://doi.org/10.1016/j.ijheh.2011.11.006>.

²⁸⁴ There is no direct link to this study. The technical summary and data are referenced in the 2021 Rapid Opinion of the SciCom (FASFC): SciCom Advies 10-2021.

²⁸⁵ There is no direct link to this study. The technical summary and data are referenced in the 2021 Rapid Opinion of the SciCom (FASFC): SciCom Advies 10-2021.

²⁸⁶ Roosens L, D'Hollander W, Bervoets L, Reynders H, Van Campenhout K, Cornelis C, Van Den Heuvel R, Koppen G, Covaci A. Brominated flame retardants and perfluorinated chemicals, two groups of persistent contaminants in Belgian human blood and milk. *Environ Pollut*. 2010 Aug;158(8):2546-52. doi: 10.1016/j.envpol.2010.05.022. Epub 2010 Jun 22. PMID: 20573431.

²⁸⁷ Vergadering Commissie voor Leefmilieu, Natuur, Ruimtelijke Ordening en Energie, PFAS-problematiek: hoorzitting, dinsdag 29 juni 2021, powerpointpresentatie OVAM, p. 4.

²⁸⁸ PFOS contamination in Zwijndrecht (Belgium) linked to 3M, including its discovery, regulation, and public debate (2000–2021), especially in relation to the Oosterweel project: <https://www.vrt.be/vrtnws/nl/2021/07/05/3m-loosde-grote-hoeveelheden-pfos-in-de-schelde-en-de-overheid/> (in Dutch).

²⁸⁹ 3M Company (2021): <https://investors.3m.com/financials/sec-filings/content/0000066740-21-000015/0000066740-21-000015.pdf>; 3M Company (2023):

<https://investors.3m.com/financials/sec-filings/content/0000066740-23-000080/0000066740-23-000080.pdf>, 3M Belgium (n.d.). *Saneringsinspanningen en investeringen in Zwijndrecht* (PFAS Stewardship): https://www.3mbelgie.be/3M/nl_BE/pfas-

(the production of other PFAS continued until 2024). Evidence likewise showed that PFAS pollution was not limited to the 3M site (see section 3.2 for details of PFAS presence in Belgium).

216. During this time, there is at least one documented instance of minimal enforcement of 3M's permit conditions. In 2020 an administrative fine of €7,200 was imposed by the Flemish government on 3M for having continuously discharged PFOS-contaminated groundwater into the Schelde river since 2006, a practice the government knew about since it first began.²⁹⁰
217. In 2021, when soil tests linked to the Oosterweel motorway project revealed dangerous PFOS levels, the situation became known as the "3M PFAS scandal".²⁹¹
218. Executed by the public project developer Lantis, the Oosterweel motorway project is one of the largest infrastructure projects ever undertaken in Belgium, designed to complete the Antwerp Ring (R1) and reduce chronic road congestion.²⁹² Due to its geographic proximity to Zwijndrecht, the construction works necessarily involved massive excavation, movement and reuse of soil originating from the 3M site. The project, therefore, brought the underlying PFOS contamination to light.²⁹³
219. Media investigations revealed that the Flemish authorities had long known of ongoing discharges without acting.²⁹⁴
220. These findings confirmed that decades of emissions had resulted in persistent and significant contamination, bringing into focus the cumulative effects of long-term PFAS emissions, their presence across the environment and the documented exposure of the population.

3.3.2 Differentiated regional responses after 2021

221. Following the 3M PFAS scandal, the issue of PFAS pollution became much more widely known among the Belgian public, largely due to media investigations, civil society activism and mobilisation, and emerging litigation.
222. Nonetheless, government responses remained inadequate.

At federal level

stewardship/samenwerkenpfas/?utm_medium=redirect&utm_source=vanity-url&utm_campaign=pfas.3m.com/information-sharing.

²⁹⁰ Rombouts, T., Schiltz, W.-F., & Schauvliege, M. (2022). Final Report of the PFAS-PFOS Parliamentary Inquiry Commission on the Management of PFOS-Contaminated Soils at the Oosterweel Site and Related Public Health Consequences ([Parl. Doc. No. 844 \(2021–2022\)](#)) – No. 36). Flemish Parliament. Submitted on March 28, 2022 (in Dutch), See notably as of p.25, Part IV.

²⁹¹ Rombouts, T., Schiltz, W.-F., & Schauvliege, M. (2022). Final Report of the PFAS-PFOS Parliamentary Inquiry Commission on the Management of PFOS-Contaminated Soils at the Oosterweel Site and Related Public Health Consequences ([Parl. Doc. No. 844 \(2021–2022\)](#)) – No. 36). Flemish Parliament. Submitted on March 28, 2022 (in Dutch).

²⁹² Oosterweel verbinding, *Het Project*. Available at: <https://www.oosterweelverbinding.be/het-project>.

²⁹³ Oosterweel verbinding, PFAS. Available at: <https://www.oosterweelverbinding.be/taxonomy/term/14>.

²⁹⁴ VRT Pano, "PFOS Cover-up in Flanders", 22 September 2021 <https://www.vrt.be/vrtnws/en/2021/09/24/pfos-scandal-more-evidence-that-the-flemish-government-asked-no/>; VRT NWS, "PFOS Pollution Scandal Continues to Make Waves in Flanders as Leaked E-mails Pop Up", 24 September 2021: <https://www.vrt.be/vrtmax/a-z/pano/2021/pano-s2021a10/>.

223. The federal government's response to PFAS has been minimal. While Belgium has voiced support for a PFAS restriction at the EU-level,²⁹⁵ it has failed to adopt any measures that could lead to long-term reduction of PFAS emissions.
224. Some political parties have proposed restrictions, such as PFAS bans on consumer products or pesticides, but these efforts have stalled: the pesticide ban was rejected in February 2026²⁹⁶ and the proposal to ban some consumer products is still pending before the Chamber of Representatives (lower house).²⁹⁷ Civil society pressure, including a 2025 petition with nearly 28,000 signatures, prompted the federal Environment Minister to commit to a national proposal and an inter-federal compensation fund, but no action on this has been taken thus far.
225. Federal measures have focused mainly on research and transition projects, such as the 2024 Belgian Builds Back Circular plan funding PFAS substitution projects,²⁹⁸ a 2023 technical study of PFAS use in industry²⁹⁹ and a 2024–2025 working group report on financing mechanisms for PFAS-related damages.³⁰⁰ Following up on the FLUOREX project which showed widespread PFAS exposure among the Belgian population via food,³⁰¹ the ongoing PFASFORWARD study was launched in 2023 to study PFAS throughout the food chain, including the impact of food processing.³⁰²
226. Public communication at federal level has been minimal. The task of taking concrete action has largely fallen on regional governments.

In Flanders

227. Between 2021 and 2025, the Flemish government adopted several measures in response to PFAS contamination around the 3M site in Zwijndrecht.³⁰³

²⁹⁵ The Brussels Times (2021). *Belgium supports EU-wide ban on chemical linked to pollution scandal*, 7 October 2021: [Belgium supports EU-wide ban on chemical linked to pollution scandal](https://www.brusselstimes.com/news/belgium-supports-eu-wide-ban-on-chemical-linked-to-pollution-scandal/).

²⁹⁶ Parliamentary file relating to PFAS issues examined in the Belgian Federal Parliament: <https://www.lachambre.be/kvvcr/showpage.cfm?section=none&language=fr&cfm=/site/wwwcfm/flwb/flwbChronology.cfm?sdocname=56K0079&id=034867&legislat=56&inst=K&dossierID=0079&db=FLWB> (in French).

²⁹⁷ The proposal aimed at reducing the population's exposure to PFAS <https://www.lachambre.be/kvvcr/showpage.cfm?section=flwb&language=fr&cfm=/site/wwwcfm/flwb/flwbwn.cfm?dossierID=0815&legislat=56&inst=K> (in French).

²⁹⁸ Government programme describing circular economy investment initiatives <https://economie.fgov.be/en/themes/enterprises/calls-projects/belgium-builds-back-circular-3>

²⁹⁹ Report outlining the proposed financing mechanism for addressing PFAS pollution in Belgium [Study analysing the presence and impact of PFAS within Belgian industry and markets; Study examining the occurrence, use and economic significance of PFAS in Belgian industry and markets, available at: https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf](https://economie.fgov.be/sites/default/files/Files/Entreprises/pfas-belgian-industry-market-study-final-public-report.pdf).

³⁰⁰ Report on the proposed financing mechanism for the remediation of PFAS pollution in Belgium, available at: <https://www.health.belgium.be/fr/organisation-politique/reglementation-documents-politique/mecanisme-financement-pollution-aux-pfas-rapport-2026> (in French).

³⁰¹ Report on human exposure to PFAS and other fluorinated compounds in Belgium (FLUOREX project), available at: https://www.sciensano.be/sites/default/files/fluorex_public_report.pdf.

³⁰² Research project examining PFAS contamination in the food chain in Belgium, available at: <https://www.sciensano.be/en/projects/research-pfas-contamination-food-chain>.

³⁰³ Public health advice issued by the Flemish government: <https://www.demorgen.be/nieuws/vlaamse-regering-eet-geen-eieren-in-straat-van-5-kilometer-rond-3m-fabriek-in-zwijndrecht-bad85c52/#:~:text=In%20afwachting%20van%20meer%20meetresultaten,het%20Agentschap%20Zorg%20en%20Gezondheid> (in Dutch).

228. Once the scandal became public, urgent health recommendations were issued in 2021, advising residents within 10 kilometres of the site to not consume home-grown produce or groundwater.³⁰⁴ Following this, “no regret” zones were established throughout Flanders.³⁰⁵ “No regret” measures (the Flemish authorities use the English phrase to indicate safety measures that they will not regret even if they turn out to be unnecessary) are restrictions imposed in designated PFAS-polluted or potentially polluted zones where the risks to human health are considered sufficiently plausible. Such measures were recommended after 2021 and included limitations on activities such as consuming locally produced food, using groundwater, or disturbing contaminated soil.
229. The Flemish government appointed a PFAS Commissioner from June 2021 to December 2022 and tasked him with coordinating the response between government officials and other stakeholders. He released four reports, as well as various policy suggestions.³⁰⁶
230. In the same period of time, a special parliamentary inquiry commission was also established, tasked with determining political responsibility and investigating the long-term public health effects of PFOS pollution and 3M’s possible liability.³⁰⁷ The commission set out a chronology of who knew and did what,³⁰⁸ and found that the PFAS contamination at issue was the result of structural failures in Flemish governance. The commission collected evidence of the various exchanges related to the health and environmental science relating to PFAS between the Flemish authorities and 3M, dating back to 2000. In its final report released on 28 March 2022,³⁰⁹ the commission concluded that the Flemish authorities had long been aware of the pollution and risks, yet failed to take timely action. The commission issued 69 recommendations to ensure that the Flemish government develop an adequate approach to addressing PFAS contamination, preventing new PFAS pollution from occurring, and ensuring that existing PFAS pollution is adequately addressed. Most of these recommendations have not been implemented.
231. Biomonitoring conducted by the Flemish Agency for Care and Health (see section 3.4.2 for the key results from PFAS biomonitoring in Belgium and 3.4.3 for the results of biomonitoring on children in Belgium) confirmed elevated PFOS levels in local residents, especially those consuming local produce. As a result, construction on the Oosterweel

³⁰⁴ De Morgen, “Flemish Government Advises Against Eating Eggs Within a 5-Kilometre Radius of the 3M Factory in Zwijndrecht”: <https://www.demorgen.be/nieuws/vlaamse-regering-eet-geen-eieren-in-straal-van-5-kilometer-rond-3m-fabriek-in-zwijndrecht~bad85c52/#:~:text=In%20afwachting%20van%20meer%20meetresultaten,hel%20Agentschap%20Zorg%20en%20Gezondheid> (in Dutch).

³⁰⁵ Information on PFAS “no regret zones”: <https://www.vlaanderen.be/datavindplaats/catalogus/actuele-no-regret-zones-pfas> (in Dutch).

³⁰⁶ Government of Flanders, “PFAS in Flanders”, official information portal on PFAS contamination, health recommendations, monitoring and remediation measures: <https://www.vlaanderen.be/en/pfas-in-flanders>.

³⁰⁷ Flemish Inquiry Commission: <https://www.vlaamsparlament.be/nl/onderzoekcommissie-pfas-pfos-0> (in Dutch).

³⁰⁸ “8 feb 2022 Tijdlijn PFOS-problematiek” from the Final Report of the Flemish Parliamentary Inquiry Commission (in Dutch – with English translation found in Annex E).

³⁰⁹ Rombouts, T., Schiltz, W.-F., & Schauvliege, M. (2022). Final Report of the PFAS-PFOS Parliamentary Inquiry Commission on the Management of PFOS-Contaminated Soils at the Oosterweel Site and Related Public Health Consequences (Parl. Doc. No. 844 (2021–2022) – No. 36). Flemish Parliament. Submitted on March 28, 2022 (in Dutch). See at: <https://www.vlaamsparlament.be/nl/parlementaire-documenten/parlementaire-initiatieven/1622062>.

project was adjusted in an attempt to prevent further spread of contamination.³¹⁰ In October 2021, the Flemish government temporarily ordered 3M to cease all PFAS-emitting operations; the order lasted roughly one year.³¹¹

232. Since then, additional health monitoring studies have been conducted, including by the government, with a particular focus on adolescents. These studies primarily track exposure trends rather than specific health impacts (described in detail in the following section 3.4. on high PFAS exposure among the Belgian population).
233. Flanders also started PFAS contamination mapping across the region and remediation planning focused on the 3M site and its surroundings. In July 2022, a €571 million remediation agreement was concluded with 3M.³¹² It included commitments to carry out remediation of contaminated soil in residential areas near the Zwijndrecht site, including: restoration of gardens; reduction of the flow of contaminated groundwater from the site; a dust management plan; and remediation of nearby agricultural and recreational land.³¹³ However, parts of the agreement have not been implemented. For example, residential garden remediation, initially planned for 2023, has been delayed, and the most recent news suggests that individual garden remediation will not start before at least mid-2027.³¹⁴
234. In comparison, a number of US states have fined companies heavily over PFAS, the Netherlands halted Chemours' emissions, and in May 2026, Australia sued 3M for A\$2 billion (roughly €1.2 billion) over hidden risks and cleanup costs.³¹⁵
235. In order to monitor and ensure the coordination of the remediation effort, a further agreement was concluded in October 2022 between NGOs and local authorities.³¹⁶ The agreement was highly criticised for failing to provide for broad remediation.³¹⁷
236. In 2023, the Flemish PFAS action plan was adopted, focusing on clean-up and remediation of industrial sites³¹⁸ and taking into account the recommendations by the Flemish Parliamentary Inquiry Commission mentioned above.³¹⁹

³¹⁰ On the advice (issued in reports dated 14 July 2021 and 22 February 2022) of a panel of scientific experts appointed to determine whether the impact of the Oosterweel works on local residents was being sufficiently mitigated: <https://www.vlaanderen.be/pfas-vervuiling/pfas-aanpak-regio-zwijndrecht/commissie-grondverzet-oosterweel> (in Dutch).

³¹¹ Government of Flanders, "Procedure Initiated to Temporarily Suspend Production Processes at 3M" <https://www.vlaanderen.be/natuur-milieu-en-klimaat/milieuhinder/procedure-opgestart-tot-het-tijdelijk-stilleggen-van-de-productieprocessen-bij-3m-29102021> (in Dutch).

³¹² Agreements made between the Flemish authorities and 3M <https://www.vlaanderen.be/pfas-vervuiling/pfas-aanpak-regio-zwijndrecht/afspraken-met-3m> (in Dutch).

³¹³ Signed Remediation Agreement with 3M available at: [PFAS - 3M - Ondertekende Saneringsovereenkomst prsjyf.pdf](#) and Press Release available at: [PFAS - Persbericht - Akkoord tussen Vlaamse Regering en 3M - 6.07.2022 aoexeh.pdf](#)

³¹⁴ Municipal information page: <https://www.gemeentebkz.be/pfas-zwijndrecht> (in Dutch).

³¹⁵ BBC News, "Belgium's 3M PFAS pollution settlement sparks debate over accountability": <https://www.bbc.com/news/articles/c3w2yl3p97qo>.

³¹⁶ Government of Flanders, "Saneringsverbond" (Remediation Agreement): <https://www.vlaanderen.be/pfas-vervuiling/pfas-aanpak-regio-zwijndrecht/saneringsverbond> (in Dutch).

³¹⁷ Grondrecht vzw, "PFAS Coalition Leaves Negotiating Table on PFAS and Oosterweel": [PFAS coalition leaves negotiating table on PFAS and Oosterweel - Grondrecht vzw](#)

³¹⁸ Policy document setting out the Flemish action plan to address PFAS contamination https://omgeving.vlaanderen.be/sites/default/files/2022-12/PFAS_actieplan_1612.pdf (in Dutch).

³¹⁹ Final report: Rombouts, T., Schiltz, W.-F., & Schauvliege, M. (2022). Final Report of the PFAS-PFOS Parliamentary Inquiry Commission on the Management of PFOS-Contaminated Soils at the Oosterweel

237. The plan lists high-level ambitions, such as preventing emissions, mapping contamination, minimising exposure, and improving public health. Yet it lacks binding obligations, targets, and deadlines, and includes no enforcement mechanisms for operators or public authorities. Aside from a limited number of concrete regulatory changes (e.g. the tightening of PFAS water discharge standards for the textile sector), ClientEarth has concluded that the plan is not capable of driving compliance or achieving an effective reduction of current PFAS risks.
238. Furthermore, the plan tends to prioritise industrial hotspots, thereby failing to address diffuse PFAS pollution adequately. While the plan emphasises remediation, it provides no clear financing model or timeline for addressing the thousands of contaminated plots of land identified. Remediation remains aspirational rather than concretely actionable. The same applies to biomonitoring: there is no systematic biomonitoring for the exposed population, nor is long-term medical follow-up envisaged. This leaves public health protection fragmented and reactive, and wholly inadequate to address the well-documented risks and clear evidence of exposure in multiple communities.
239. In addition, the plan does not remedy long-standing communication failures. It contains no enforceable transparency obligations, no real-time disclosure of monitoring data, and no clear protocol for informing residents across the territory, in particular in newly identified hotspots. Many actions focus on further studies, assessments, and knowledge development, which risks delaying concrete interventions despite the substantial scientific evidence already available.
240. It is widely recognised that there were serious communication failures: despite the authorities becoming aware of the problem in 2000, residents were not informed for nearly two decades.³²⁰
241. Parliamentary debates in 2022 revealed anger at misleading assurances.³²¹ Subsequent risk maps and helpdesks improved access to information, but affected people believe these efforts are insufficient³²² and perceive them as inaccurate, misleading, or falsely reassuring.³²³ For example, the information provided by the health department on the second biomonitoring results for 3M in 2025 suggested that PFOS levels in blood had decreased compared to the last measurements taken in 2021, even though the technical validation study finds that the results are not comparable due to

Site and Related Public Health Consequences (Parl. Doc. No. 844 (2021–2022) – No. 36). Flemish Parliament. Submitted on March 28, 2022 (in Dutch).

³²⁰ VRT NWS, “Decision Not to Communicate About PFOS Contamination Was a Political Decision” <https://www.vrt.be/vrtnws/nl/2021/10/01/beslissing-om-niet-te-communiquer-over-pfos-vervuiling-was-poli/> (in Dutch).

³²¹ Flemish Parliament, *Plenary Meeting Report*, 6 October 2021 <https://www.vlaamsparlament.be/nl/parlementair-werk/plenaire-vergaderingen/1528084/verslag/1532903> (in Dutch);

³²² Letter from Grondrecht regarding the comparison of PFOS levels from the large-scale blood study (2023–2025) with PFOS levels from earlier blood research (2021) in public and press communications (on file with the authors).

³²³ Climaxi, “Utexbel (Ronse): VITO Measures Incorrectly and OVAM Refuses to Share the Results” <https://www.climaxi.be/nieuws/utexbel-ronse-vito-meet-fout-en-ovam-weigert-resultaten-te-delen>; VRT NWS, “PFAS Contamination in Stabroek: New Soil Advice Issued for Residents” <https://www.vrt.be/vrtnws/nl/2026/04/23/pfas-stabroek-bodemadvies/> (both in Dutch).

important methodological differences.³²⁴ A 2025 parliamentary resolution explicitly referenced “years of protest by citizens and action groups”.³²⁵

242. Courts have since found the Flemish Region and OVAM in particular negligent,³²⁶ and NGOs continue to challenge temporary frameworks³²⁷ and permitting decisions.³²⁸ Civil and criminal proceedings have been launched;³²⁹ compensation was awarded in Antwerp in 2023³³⁰ and 1,400 residents began collective redress proceedings in 2026.³³¹ Ombudsman complaints,³³² Council of State proceedings,³³³ and grassroots protests,³³⁴ underscore the ongoing lack of effective measures. A judgment from May 2026 by the Court of First Instance of East Flanders (in Ghent) found the company Utexbel and its managing director guilty of crimes related to unlawful PFAS-contaminated waste discharges and repeated breaches of permit conditions.³³⁵ At the time of this complaint, the deadline has not yet expired for them to appeal this judgment.

³²⁴ Government of Flanders, “PFAS Blood Testing in the Zwiindrecht Region”

<https://www.vlaanderen.be/pfas-vervuiling/pfas-bloedonderzoeken-regio-zwiindrecht> (in Dutch). The technical validation report (<https://publicaties.vlaanderen.be/view-file/73699>) mentions p.21: “A comparison of the results between the first blood study and the large-scale blood study for Br-PFOS and, consequently, Total-PFOS is methodologically incorrect because the two laboratories measure these components too differently. This conclusion is extended to all branched and therefore all total forms of PFAS components, including Total-PFOA and Total-PFHxS, because these components are determined in a semi-quantitative manner” (translated from Dutch).

³²⁵ <https://docs.vlaamsparlament.be/files/pfile?id=2230433&>.

³²⁶ Ruling of the First-Instance Dutch-Speaking Court of Brussels, 19 September 2024, [Vonnis-19-september-2024-PFOS.pdf](#) (in Dutch).

³²⁷ *Leefbaar Groot Kortemark and Others v. Flemish Government*, Belgian Council of State (Raad van State), case No. G/A 240.331/VII-42.242, action for annulment of the PFAS “Temporary Action Framework”.

³²⁸ The proceedings seeking the annulment of health-damaging PFAS emission standards are currently pending before the Council for Permit disputes. Environmental organisations have appealed both PFAS discharge standards (e.g. in the Oosterweel project case): <https://www.despecialist.eu/nl/nieuws/milieuverenigingen-krijgen-ongelijk-in-zaak-rond-lozingsnormen-oosterweel.html> (in Dutch), and permits for industrial facilities where PFAS emissions were at issue (e.g. Tenneco): <https://www.vrt.be/vrtnws/nl/2025/06/07/milieuverenigingen-trekken-naar-raad-voor-vergunningsbetwistinge/> (in Dutch).

³²⁹ A judicial (criminal) investigation was already opened against 3M in 2021 after some residents filed a complaint: [Chemiereus 3M voor de vrederechter wegens PFOS-burenhinder | VRT NWS Nieuws](#) (in Dutch). Also, the Limburg public prosecutor’s office has been investigating PFAS pollution at the Shamrock Technologies site in Tongeren since 2025, for illegal shipment of PFAS containing waste to its US parent company.

³³⁰ In 2022, a family from Zwiindrecht, with very high concentrations of PFOS in their blood and in their garden, filed a lawsuit for compensation against 3M. A civil judgment was delivered on 16 May 2023 by the Justice of the Peace in Antwerp. The court held that 3M had caused excessive neighbourhood nuisance due to PFAS emissions, awarding compensation of €500 per household member. The court found that PFAS concentrations in both (garden) soil and human bodies constituted a serious infringement on residents’ right to enjoy their property and live in a healthy environment. [Vred. Antwerpen \(5\) nr. 22A3007/5, 15 mei 2023 Catalogue en ligne](#)

³³¹ The Brussels Times with Belga, “*Belgian residents take chemical company to court over PFAS contamination*”, [Belgian residents take chemical company to court over PFAS contamination](#).

³³² Flemish Ombudsman Service’s annual report for 2022: [12279 VO Covers jaarverslag A4.indd](#)

³³³ For example, see footnote 338 below.

³³⁴ Light parade against PFAS policy: <https://www.climaxi.be/agenda/ronse-lichtstoet-tegen-pfas-beleid> (in Dutch).

³³⁵ Court of First Instance of East-Flanders (Ghent division), Criminal Section, Judgment of 16 May 2026, case no. 2024/CF/1278 (Utexbel), [News | District Court of First Instance of East Flanders - Ghent Division](#).

243. The Council of State (Belgium's highest administrative court) has annulled specific permits and halted limited aspects of projects involving PFAS contamination, such as the Oosterweel roadworks, but did not require full remediation or cessation of PFAS-emitting operations.³³⁶
244. Despite court decisions to annul or suspend permits, the Flemish authorities have continued to issue new permits or re-issue suspended ones, often with only minor adjustments, allowing soil works and project phases to proceed despite ongoing legal uncertainty, including in PFAS-contaminated areas.³³⁷
245. In December 2023, environmental NGOs including the West-Vlaamse Milieufederatie and Climaxi filed a case with the Council of State challenging government permitting decisions authorising foreshore replenishment in Knokke-Heist with sand and sediment from the Nieuwe Sluis Terneuzen project because it could contain PFAS and lacked adequate environmental assessment; a decision from the Council of State was initially expected in 2024.³³⁸ As of the time of this complaint, the case appears pending before the Council of State, and no decision has been publicly reported.
246. Several other proceedings seeking the annulment of PFAS emission standards are currently pending before the Council for Permit Disputes (a Flemish administrative tribunal that rules on appeals concerning spatial planning and permits). Environmental organisations have appealed both PFAS discharge standards (e.g. in the Oosterweel project case)³³⁹ and permits for industrial facilities where PFAS emissions were at issue.³⁴⁰
247. In sum, Flanders has taken some localised remedial and mitigation measures and secured, via remediation agreement, what appears to be a large sum from 3M. However,

³³⁶ For example : see Council of State, Judgment no. 253.523 of 19 April 2022, case A. 235.867/VII-41.332 - <https://www.raadvst-consetat.be/arr.php?nr=253523>.

³³⁷ Mentioned in the hearing report 844 (2020-2021) ("*Verslag van de hoorzitting*") produced by Flemish Parliamentary Inquiry Commission: <https://docs.vlaamsparlament.be/pfile?id=1821339> (in Dutch). Also mentioned in the Council of State case: RAAD VAN STATE, AFDELING BESTUURSRECHTSPRAAK VIIBISDE KAMER nr. 260.429 van 12 juli 2024 in de zaken I. A. 235.867/VIIBIS-1 II. A. 240.445/VIIBIS-2. <https://www.raadvanstate.be/arr.php?nr=260429>.

³³⁸ These proceedings in the name of the non-profit organization West-Vlaamse Milieufederatie and others are known to the Council of State under the role number G/A 240.747/VII-42307. The case relates to the transfer, from the Netherlands to Flanders, of 2.6 million m³ of PFAS-containing sand from the Nieuwe Sluis Terneuzen infrastructure project, with a view to useful application as foreshore replenishment of the coast of Knokke, in the period from 1 October 2023 to 30 September 2024. In Knokke, extremely high concentrations of PFAS in sea foam were already detected by the Flemish Institute for Technological Research (VITO) in 2021 and 2022, up to 2,400,000 ng/l for the sum of all detected PFAS compounds (https://assets.vlaanderen.be/image/upload/v1676639526/VITO_-_PFAS_in_zeewater_en_zeeschuim_draft_eindrapport_feb_2023_z7jemc.pdf).

In April 2023, VITO conducted a follow-up study, which also found significantly elevated PFAS concentrations in ambient air in Knokke: https://reflabos.vito.be/onderzoekrapporten/2024_Verkennend_onderzoek_naar_PFAS_in_omgeving_slucht_in_Vlaanderen_v10.pdf.

³³⁹ *De Specialist*, "Environmental Organizations Lose Case Concerning Oosterweel Discharge Standards.": <https://www.despecialist.eu/nl/nieuws/milieuverenigingen-krijgen-ongelijk-in-zaak-rond-lozingsnormen-oosterweel.html> (in Dutch).

³⁴⁰ VRT NWS, "Environmental Organizations Continue to Oppose the Permit for Shock Absorber Manufacturer Tenneco in Sint-Truiden": <https://www.vrt.be/vrtnws/nl/2025/06/07/milieuverenigingen-trekken-naar-raad-voor-vergunningsbetwistinge/> (in Dutch).

as demonstrated by parliamentary questions and reports,³⁴¹ media reports³⁴² and citizen reactions,³⁴³ these steps have been delayed, fragmented, and insufficient, marked by years of withheld information and weak enforcement.³⁴⁴ Residents continue to feel exposed and anxious about the state of PFAS pollution. Civil society continues to argue that Flanders' response is reactive rather than preventive, with structural gaps in transparency, regulation and protection for affected communities. The costs of remediation appear to exceed the Region's resources, even following the settlement with 3M.³⁴⁵ Significantly, Belgium's Court of Auditors confirmed in March 2026 that the Osterweel project's costs will not be covered by toll revenue, citing remediation costs related to PFAS pollution.³⁴⁶

In Wallonia

248. Wallonia has also introduced measures to respond to hotspot crises. The measures taken so far by Wallonia, such as the installation of filters, biomonitoring and temporary sludge restrictions, seek to mitigate risk from existing pollution at hotspots. There are no measures that seek to reduce PFAS contamination over the long-term or set targets towards that aim. Some commitments, such as a map of PFAS-risk sites or a PFAS sector fund to compensate PFAS-related damages, are yet to be implemented.
249. PFAS contamination in Wallonia first emerged as a major concern at the US military base in Chièvres in 2017, but the authorities failed to act until media investigations beginning in 2022 brought the matter to the public's attention.
250. In January 2022, the Public Service of Wallonia (SPW),³⁴⁷ the region's civil service and administration, communicated the results from PFAS environmental sampling conducted in the Chièvres waterworks and related groundwater sources to the Walloon government, showing that normative thresholds had been exceeded.³⁴⁸ Following that,

³⁴¹ Flemish Parliament, *Parliamentary Documents – Questions and Interpellations* <https://www.vlaamsparlament.be/nl/parlementaire-documenten/vragen-en-interpellaties/2045746> (in Dutch).

³⁴² VRT Nws, *La justice pointe la communication tardive des autorités flamandes sur la pollution aux PFAS à Zwijndrecht*. Available at : <https://www.vrt.be/vrtnws/fr/2024/09/20/la-justice-pointe-la-communication-tardive-des-autorites-flamand> (in Dutch); Le Monde, *Excavating soil, changing lake water, no playing outside: PFAS-contaminated Flanders' dystopian disaster*. Available at: https://www.lemonde.fr/en/les-decodeurs/article/2025/01/15/excavating-soil-changing-lake-water-no-playing-outside-pfas-contaminated-flanders-dystopian-disaster_6737059_8.html (under paywall).

³⁴³ Climaxi, *PFAS-ronde van Vlaanderen*. Available at: <https://www.climaxi.be/nieuws/pfas-ronde-van-vlaanderen>; Climaxi, *PFAS blijft een probleem in Vlaanderen*. Available at: <https://www.climaxi.be/nieuws/pfas-blijft-een-probleem-vlaanderen> (in Dutch).

³⁴⁴ See Annexes E and F.

³⁴⁵ The Flemish Government has already spent tens of millions of euros on investigations, testing, and emergency measures early in the crisis, including: €25 million from the Vlaams Fonds voor de Lastendeling in December 2018; €1.83 million allocated in late 2019 for PFOS/PFAS response; and €23 million on relance (recovery) funds in 2020. These numbers were raised by Prime Minister Jan Jambon during parliamentary debate of 2021: <https://www.vlaamsparlament.be/nl/parlementair-werk/plenaire-vergaderingen/1528084/verslag/1532903>.

³⁴⁶ Belgian Court of Audit (Rekenhof), *Toekomstverbond – Controleverslag bij de zesde financiële voortgangsrapportage* (Audit report on the sixth financial progress report of the Future Pact / Osterweel project), 24 March 2026. https://www.ccrek.be/sites/default/files/Docs/2026_18_Toekomstverbond.pdf

³⁴⁷ SPW is the regional public administration of the Walloon Region in Belgium. It functions like the Walloon government's civil service, managing policy implementation, administration, and public services at the regional level.

³⁴⁸ Document relating to the PFAS case in Wallonia: RTBF https://ds1.static.rtbf.be/uploader/pdf/2/4/f/beta_4b6f6db6125e7edaf9720ccb2d88917b.pdf (in French).

SPW sent other internal warning emails about high PFAS levels in Chièvres, as reported by the RTBF.³⁴⁹

251. According to the RTBF investigation,³⁵⁰ the authorities in Flanders had begun raising concerns about the quality of water sourced from Wallonia in March 2022. In March 2022 and then again in January 2023, the Flemish environment minister contacted her Walloon and Brussels counterparts regarding suspicion of PFAS contamination in drinking water sourced from their respective regions.³⁵¹ Despite these exchanges, public scrutiny increased in Wallonia only after the RTBF launched its own investigation and requested access to official documents of the SWDE (the Walloon water utility) in March 2023.
252. It was only after the RTBF aired its investigation "*Polluants éternels, silence coupable*" on 8 November 2023 that the Walloon government started publicly acknowledging the issue.³⁵² The Chièvres City Council was only informed of the contamination results in May 2023, shortly after RTBF obtained them through investigative reporting.
253. Since then, monitoring of drinking water, soil, and sludge has expanded, with testing mandated across the region's 640 water distribution zones. Results have shown alarming PFAS levels in Chièvres, Nandrin, and Ronquières,³⁵³ and by 2025 rising concentrations of TFA in 36 zones. Carbon filters were installed in Chièvres,³⁵⁴ temporary measures were introduced for sludge use for agricultural purposes,³⁵⁵ but air monitoring remains absent.
254. The Independent Scientific Council (CSI) was created in 2023 to advise the Walloon government on PFAS.³⁵⁶
255. The Walloon administration is currently carrying out a complete mapping of PFAS-risk sites (e.g. military bases, fire stations, industrial sites using PFAS, etc.) but a map is not

³⁴⁹ News report presenting a chronology of the PFAS case, RTBF

<https://www.rtbef.be/article/chronologie-du-dossier-pfas-voici-une-nouvelle-preuve-que-le-cabinet-de-la-ministre-tellier-avait-ete-informe-de-la-situation-de-chievres-en-juin-2022-11286054> (in French).

³⁵⁰ News report presenting a chronology of the PFAS case, RTBF <https://www.rtbef.be/article/chronologie-du-dossier-pfas-voici-une-nouvelle-preuve-que-le-cabinet-de-la-ministre-tellier-avait-ete-informe-de-la-situation-de-chievres-en-juin-2022-11286054> (in French).

³⁵¹ Ibid.

³⁵² RBTF Actus, *Chronologie du dossier "PFAS" : voici une nouvelle preuve que le cabinet de la ministre Tellier avait été informé de la situation de Chièvres en juin 2022*. Available at: <https://www.rtbef.be/article/chronologie-du-dossier-pfas-voici-une-nouvelle-preuve-que-le-cabinet-de-la-ministre-tellier-avait-ete-informe-de-la-situation-de-chievres-en-juin-2022-11286054> (in French).

³⁵³ Report presenting findings on PFAS contamination in Wallonia, including health-related assessments: Service Public de Wallonie, https://environnement.wallonie.be/files/Images/Gestion%20environnementale/EnvironnementSante/document%20pdf/PFAS/PFAS_CSI_Rapport_Final_VF.pdf (in French), p. 17.

³⁵⁴ RBTF Actus, *Chronologie du dossier "PFAS" : voici une nouvelle preuve que le cabinet de la ministre Tellier avait été informé de la situation de Chièvres en juin 2022*. Available at: <https://www.rtbef.be/article/chronologie-du-dossier-pfas-voici-une-nouvelle-preuve-que-le-cabinet-de-la-ministre-tellier-avait-ete-informe-de-la-situation-de-chievres-en-juin-2022-11286054> (in French).

³⁵⁵ RBTF actus, *Pollution aux PFAS : la Wallonie limite l'usage de boues issues de stations d'épuration comme fertilisants agricoles*. Available at: <https://www.rtbef.be/article/pollution-aux-pfas-la-wallonie-limite-l-usage-de-boues-issues-de-stations-d-epuration-comme-fertilisants-agricoles-11446977> (in French).

³⁵⁶ Independent Scientific Committee's report on PFAS contamination [PFAS : le rapport du Comité Scientifique Indépendant est disponible - L'Environnement en Wallonie](#) (in French).

available yet.³⁵⁷ Wallonia's residents can check the water quality on their street via a dedicated website provided by SWDE,³⁵⁸ which shows several water quality parameters, including the sum of 20 PFAS, the sum of 4 PFAS, and TFA.

256. Following recommendations from the CSI, an independent Walloon scientific advisory authority, on TFA in August 2024,³⁵⁹ the SWDE started monitoring TFA in drinking water, which led to a first report in September 2024.³⁶⁰ In April 2025, a second government report identified exceedances of health guidance values for TFA in drinking water and highlighted an upward trend between the two sampling periods.³⁶¹ It received little attention until another RTBF exposé in June 2025.³⁶² A third report published in June 2026 confirms TFA levels above the health guidance value applied in Wallonia in 13 water distribution zones and highlights correlations between TFA contamination and the use of PFAS pesticides.³⁶³
257. The Walloon government's responses have included a PFAS action plan (2023–2024) with water and soil thresholds, biomonitoring, food testing, medical guidance, and voluntary industry agreements.³⁶⁴ However, much like the Flemish plan, the Walloon strategy leans heavily on further analyses, inventories and methodological development. It highlights intentions rather than binding measures, enforceable duties, and actions. Notably, the strategy announces the future development of PFAS thresholds for air and soil, but these values have not yet been adopted and would not be binding or linked to concrete enforcement or remediation obligations. This risks delaying concrete

³⁵⁷ Overview of PFAS-related policies and regulatory approaches in Belgium: OECD, *PFAS Country Information: Belgium*

<https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/risk-management-risk-reduction-and-sustainable-chemistry2/pfas-country-information/Belgium.pdf>.

³⁵⁸ Information on drinking water quality monitoring and standards in Wallonia

<https://www.swde.be/en/water-quality>.

³⁵⁹ Wallonie Environnement SPW, *Note du conseil scientifique indépendant (CSI) PFAS. Toxicité de l'acide trifluoroacétique (TFA) & réflexion sur une norme de concentration dans l'environnement (et plus spécifiquement dans l'eau)*. Available at:

<https://environnement.wallonie.be/files/eDocs%20Environnement/Milieux/Eau/Eau%20de%20distribution/Monitoring%20TFA/1.%20Avis%20du%20CSI%20concernant%20le%20TFA.pdf>.

³⁶⁰ Wallonie Service Public SPQ, *RAPPORT*

Le TFA dans les eaux de distribution en Wallonie, Etat des lieux, Septembre 2024. Available at : <https://environnement.wallonie.be/files/eDocs%20Environnement/Milieux/Eau/Eau%20de%20distribution/Monitoring%20TFA/2.%20Monitoring%20TFA%20-%201er%20rapport%20-%20Septembre%2024.pdf>.

³⁶¹ TFA in drinking water in Wallonia: State of play, 2nd report (April 2025): <https://environnement.wallonie.be/files/eDocs%20Environnement/Milieux/Eau/Eau%20de%20distribution/Monitoring%20TFA/3.%20Monitoring%20TFA%20-%202eme%20rapport%20-%20Avril%202025%20V2.pdf>. (in French).

³⁶² News report describing rising concentrations of TFA detected in drinking water across Wallonia: <https://www.rtbf.be/article/pfas-les-niveaux-de-tfa-grimpent-en-toute-discretion-dans-les-eaux-wallonnes-testees-11561824> (in French).

³⁶³ Wallonie Service Public SPQ, *RAPPORT*

Le TFA dans les eaux de distribution en Wallonie, Etat des lieux, - 3ème rapport - Juin 2026. : <https://environnement.wallonie.be/files/eDocs%20Environnement/Milieux/Eau/Eau%20de%20distribution/Monitoring%20TFA/4.%20Monitoring%20TFA%20-%203eme%20rapport%20-%20Juin%202026.pdf>. For more information on the TFA monitoring in Wallonia: <https://environnement.wallonie.be/home/milieux/eau/etat-des-eaux/eau-de-distribution.html>.

³⁶⁴ Press release outlining a strategy to address PFAS contamination in order to protect public health and the environment: Philippe Henry (Walloon Minister for Environment) <https://coppieters.wallonie.be/home/communiques-de-presse/presse/pfas-strategie-pour-preserver-la-sante-publique-et-l-environnement.html> (in French).

interventions, despite the fact that widespread PFAS contamination in Chièvres, Liège Airport, and other sites has been known for years.

258. Furthermore, residents find that communication has been slow and incomplete: contamination results were withheld from local councils until 2023, health advice remains vague, leaving a gap that doctors attempt to fill³⁶⁵ and civil society and doctors have criticised the lack of proactive public health planning.³⁶⁶ Public pressure has grown, with municipalities,³⁶⁷ members of parliament,³⁶⁸ and coalitions of water companies and NGOs calling for a PFAS ban,³⁶⁹ though political divisions have stalled binding legislation.³⁷⁰
259. Legal proceedings are also underway: the Chièvres municipality filed a criminal complaint in 2024,³⁷¹ which was later joined by other municipalities³⁷² and by 2025 over 130 residents and NGOs became *parties civiles* (enjoying official standing in the criminal proceedings), seeking recognition of over-exposure.³⁷³

In Brussels

260. Since 2021, it has been mandatory to test soil for PFAS in cases of land sales or high-risk activities.³⁷⁴ Targeted PFAS analyses have been conducted on sites linked to PFAS-

³⁶⁵ The *Société Scientifique de Médecine Générale* (SSMG), a Belgian association of francophone general practitioners, has published FAQs and fact sheets on PFAS exposure aimed at helping family doctors understand what PFAS are, how exposure is measured, how to interpret biomonitoring results, and what clinical questions patients may ask: https://www.ssmg.be/wp-content/uploads/Cellules-spec/Environnement/PFAS/2025_FAQ_PFAS_v2.pdf (in French).

³⁶⁶ Media interview in which a representative of the SSMG discusses PFAS pollution and publicly calls on health ministers and policymakers to improve public health guidance and clinical support tools for physicians: <https://www.notele.be/si103-media151865-pollution-aux-pfas-le-dr-john-pauluis-societe-scientifique-de-medecine-generale-interpelle-les-ministres-de-la-sante-et-les-decideurs-politiques.html> (in French).

³⁶⁷ Report describing the approval of a municipal motion on water quality (PFAS and pesticides) by the Beauvechain municipal council <https://beauvechain.ecolo.be/2025/07/01/notre-motion-qualite-de-leau-pfas-pesticides-a-ete-approuvee-par-le-conseil-communal-ce-30-juin/> (in French).

³⁶⁸ Walloon Parliament, *Analytical Report of the Committee* (2024–2025) https://nautilus.parlement-wallon.be/Archives/2024_2025/CRAC/crac150.pdf (in French), pp. 77.

³⁶⁹ L'Europe doit interdire les PFAS à la source – et la Belgique a un rôle à jouer - LETTRE OUVERTE AUX POLITIQUES, February 2025, <https://www.aquawal.be/fr/12-02-2025-l-europe-doit-interdire-les-pfas-a-la-source-et-la-belgique-a-un-role-a-jouer-lettre-ouverte-aux-politiques.html?IDC=480&IDD=9847> (in French).

³⁷⁰ Walloon Parliament, *Analytical Report of the Committee* (2024–2025) https://nautilus.parlement-wallon.be/Archives/2024_2025/CRAC/crac150.pdf (in French), pp. 72.

³⁷¹ Media report stating that the municipality of Chièvres initiated legal action: <https://www.rtl.be/actu/regions/hainaut/pollution-aux-pfas-la-ville-de-chievres-porte-plainte-contre-x/2024-06-27/article/684620> (in French).

³⁷² News report describing legal action by the municipality of Braine-le-Comte: <https://www.rtbef.be/article/pollution-aux-pfas-braine-le-comte-se-porte-partie-civile-11399308> (in French).

³⁷³ News report describing how approximately 130 residents of Chièvres formally joined civil proceedings as civil parties in relation to PFAS contamination affecting local water supplies: <https://www.rtbef.be/article/a-chievres-130-citoyens-se-constituent-partie-civile-dans-l-affaire-des-pfas-11591576> (in French); more information about the group here: <https://www.sosnotresante.com/a-propos>.

³⁷⁴ Official regional government webpage outlining Brussels' strategic approach to PFAS contamination: <https://environnement.brussels/citoyen/politique-regionale/plans-strategiques-regionaux/pfas-dans-les-eaux-et-les-sols-en-region-de-bruxelles-capitale> (in French).

related activities³⁷⁵ and Bruxelles Environnement has issued a Code of Good Practices (2022) for soil and groundwater management.³⁷⁶

261. However, where residents want an analysis of possible PFAS contamination of their property's soil, they must pay for it themselves (€200) and also have to bear the costs of further expertise if the soil is found to be contaminated.³⁷⁷
262. More than 600 sites were investigated in 2023, with contamination confirmed at 82 plots and integrated into a public map.³⁷⁸ In 2024, Brussels' public water utility Vivaqua conducted monitoring and showed that while tap water met the Belgian standards in force at the time,³⁷⁹ almost all samples exceeded the stricter limits set by the EU Drinking Water Directive.³⁸⁰
263. The most serious example is the Sicli site in Uccle, a fire extinguisher factory which closed when the company went bankrupt in late 2024.³⁸¹ Studies commissioned by Sicli from 2023 confirmed soil contamination was 708 times the legal threshold, and groundwater 1,058 times the legal threshold.³⁸² Despite this, the environmental permit issued to Sicli on 18 June 2024 did not mention the presence of PFAS nor did it provide for specific precautions in this regard.³⁸³
264. In 2025, public statements by the authorities revealed ongoing exceedances, and residents were advised not to consume local produce or use well water within 100 metres of the site.³⁸⁴ When the company went bankrupt, responsibility for remediation shifted to public authorities.³⁸⁵ In this context, Bruxelles Environnement established a

³⁷⁵

Annual institutional report outlining communication and awareness activities regarding PFAS contamination: <https://environnement.brussels/citoyen/nos-actions/rapports-annuels/sensibiliser-aux-pfas-presente-dans-nos-eaux-et-nos-sols-rapport-annuel-2023> (in French).

³⁷⁶ Code of good practice for PFAS in soil and groundwater: <https://alfresco.environment.brussels/share/s/VdXVSQ2jQiG0WBccbVjQZw> (in French).

³⁷⁷ PFAS in water and soils (policy framework page): <https://environnement.brussels/citoyen/nos-actions/plans-et-politiques-regionales/pfas-dans-les-eaux-et-les-sols-en-region-de-bruxelles-capitale> (in French).

³⁷⁸ Interactive geospatial dataset: <https://geodata.leefmilieu.brussels/client/view/01445cff-7034-463e-853c-e918232a8a5e> (in French).

³⁷⁹ Official statement by the Brussels water: <https://www.vivaqua.be/fr/qualite-de-leau-leau-distribuee-par-vivaqua-respecte-partout-la-valeur-guide-du-csi-pour-le-tfa/> (in French).

³⁸⁰ Parliamentary record containing technical and policy discussions on PFAS contamination: https://ds1.static.rtbf.be/uploader/pdf/1/9/f/beta_ac65615391d51be4235fea93f244eeb8.pdf (in French).

³⁸¹ Media article describing precautionary public health: 'Don't eat anything from your garden': Major PFAS contamination near Brussels industrial site.

³⁸² Investigative news report: <https://www.rtbf.be/article/pollution-pfas-sur-le-site-du-fabricant-d-extincteurs-sicli-a-uccle-les-autorites-connaissaient-les-concentrations-extremes-depuis-2023-11567154> (in French).

³⁸³ Octroi de permis d'environnement - DOSSIER N° 1.843.649 - https://ds1.static.rtbf.be/uploader/pdf/4/a/7/tv_8fca09799270d3ed7d27c12633d7c144.pdf.

³⁸⁴ Media report summarising official clarifications by Brussels Environment regarding contamination at the Sicli site: <https://www.rtbf.be/article/bruxelles-environnement-clarifie-la-situation-sur-la-pollution-aux-pfas-du-site-sicli-a-uccle-11603990>.

³⁸⁵ Professional health-sector article reporting PFAS contamination at the former SICLI site : [Des PFAS sur le site de l'entreprise SICLI à Uccle; Pollution aux PFAS sur le site de SICLI à Uccle : la Région bruxelloise active un plan d'action sanitaire - Le Spécialiste](#) (in French).

safety perimeter around the site, conducted ongoing site assessments, and has plans to protect nearby residents – it has organised dedicated public information sessions.³⁸⁶

265. Public communication has improved with maps,³⁸⁷ FAQs,³⁸⁸ training for soil experts, and information sessions for residents,³⁸⁹ but residents and civil society highlight delays, inconsistencies, and lack of transparency.³⁹⁰
266. During parliamentary debates, regional MPs have pressed the regional Environment Minister to clarify water safety³⁹¹ and regional PFAS norms,³⁹² while local NGOs, in particular WeAreNature Brussels, stress the need for clearer health guidance and better aggregation of water data.³⁹³
267. The Fire and Emergency Medical Assistance Service from Brussels has furthermore decided to replace firefighting foam, which is heavily laden with PFAS, and to decontaminate land polluted by years of firefighting exercises. This represents a public investment estimated at nearly €1.5 million over four years.³⁹⁴

3.4 High PFAS exposure among the Belgian population

3.4.1 Introduction to biomonitoring

268. Biomonitoring studies measure PFAS levels directly in human biological samples, most commonly blood serum. They are used to provide concrete evidence of human exposure that complements environmental measurements in soil, water, and air.
269. Across Belgium, both small-scale regional studies and larger population surveys have been conducted to measure PFAS levels in different communities, in particular in areas with known contamination (“hotspots”) in Wallonia and Flanders.
270. Belgium does not have a comprehensive set of national biomonitoring standards for PFAS or most other contaminants and there are no legally binding threshold values for PFAS concentrations in human blood. Biomonitoring results are interpreted using external reference values, particularly those developed in Germany and at European level (see section 2.2 on the approach to PFAS measurement above). These are not

³⁸⁶ Official press communication reporting the detection of PFAS contamination : [Des PFAS sur le site de l'entreprise SICLI à Uccle](#) (in French).

³⁸⁷ Official policy document outlining PFAS contamination: <https://environnement.brussels/citoyen/nos-actions/plans-et-politiques-regionales/pfas-dans-les-eaux-et-les-sols-en-region-de-bruxelles-capitale> (in French).

³⁸⁸ Public information resource addressing common questions on PFAS: <https://environnement.brussels/blog-citoyen/dossiers/les-10-questions-les-plus-frequentes-sur-les-pfas> (in French).

³⁸⁹ Official institutional report outlining Brussels Environment's PFAS-related activities in 2023: <https://environnement.brussels/citoyen/documentation-et-outils/rapports-annuels/sensibiliser-aux-pfas-presente-dans-nos-eaux-et-nos-sols-rapport-annuel-2023> (in French).

³⁹⁰ Civil society statement: <https://wearenature.brussels/communique-de-presse-contamination-aux-pfas-sur-le-site-de-lusine-sicli-a-uccle-la-transparence-complete-est-indispensable/> (in French).

³⁹¹ Media report covering political debate in the Brussels Parliament concerning PFAS contamination in drinking water: <https://bx1.be/categories/news/pollution-de-leau-aux-pfas-lopposition-presse-alain-maron-de-sexpliquer-au-parlement-bruxellois/> (in French).

³⁹² Official parliamentary record containing questions, interpellations and governmental responses regarding PFAS contamination: <https://weblex.irisnet.be/data/crb/biq/2023-24/00047/images.pdf> (in French).

³⁹³ Annex

³⁹⁴ RTBF article on PFAS remediation costs in Europe : [100 milliards d'euros par an pour décontaminer l'Europe des PFAS \(1/4\) - RTBF Actus](#) (in French).

strict regulatory limits but rather benchmarks which are meant to help authorities assess whether exposure levels warrant further investigation or even action.

271. Experts from Wallonia's Independent Scientific Committee on PFAS³⁹⁵ have issued an opinion on health threshold values for PFAS. They recommend using the reference threshold values defined by the US NASEM and the German biomonitoring Agency HBM-I for PFOS and PFOA.³⁹⁶ Flemish authorities have been using (as health assessment values) the German HBM-I and HBM-II assessment values as part of the FLEHS study programme and the 2021 3M study.³⁹⁷ There appears to be no official biomonitoring in Brussels.
272. There is no specific legal obligation, at either federal or regional level, to conduct systematic epidemiological assessments of the health effects of PFAS on the general population. Current initiatives in the field of biomonitoring and medical follow-up are voluntary measures, rather than obligations imposed by binding legislation. No binding legal obligation exists, in any region, requiring the systematic monitoring of PFAS in the human body.

3.4.2 Key results from PFAS biomonitoring studies in Belgium

273. PFAS presence in the blood of Belgian residents has been identified through various biomonitoring studies, as described below and in Annex J.
274. These have primarily taken place in Flanders (from FLEHS I in 2002 to date), with some studies undertaken in Wallonia (2015 to date). No biomonitoring has been conducted in Brussels thus far.
275. In July 2025 the Belgian Health Care Knowledge Centre issued a report commissioned by the federal government advising against individual blood screening for PFAS outside of biomonitoring programs linked to scientific research, arguing that individual tests are costly and the links between PFAS and specific health conditions still unclear.³⁹⁸ The report was criticised by health researchers, such as Anne-Simone Parent, a paediatric endocrinologist at CHU Liège, and Céline Bertrand, an environmental health specialist at the SSMG (Belgian Scientific Society of General Medicine), who contend that the health risks of PFAS have been well documented.³⁹⁹ Dr Parent was quoted in an article by the RTBF:

[t]here is solid scientific evidence highlighting the effects of PFAS on health. That evidence exists. And the value of measuring PFAS is that it makes it possible to provide recommendations for long-term monitoring of individuals who may have been exposed to

³⁹⁵ CSI – *Conseil Scientifique Indépendant*. The CSI was established by the Walloon Government on 22 November 2023.

³⁹⁶ PFAS - L'Environnement en Wallonie. Available at: [PFAS - L'Environnement en Wallonie](#)

³⁹⁷ See for example in: Colles A, Bruckers L, Den Hond E, Govarts E, Morrens B, Schettgen T, Buekers J, Coertjens D, Nawrot T, Loots I, Nelen V, De Henauw S, Schoeters G, Baeyens W, van Larebeke N. Perfluorinated substances in the Flemish population (Belgium): Levels and determinants of variability in exposure. *Chemosphere*. 2020 Mar;242:125250. doi: 10.1016/j.chemosphere.2019.125250. Epub 2019 Nov 1. PMID: 31896205.

³⁹⁸ Scientific policy report assessing the usefulness of individual PFAS blood testing: https://www.kce.fgov.be/sites/default/files/2025-07/KCE_403B_Depistage_PFAS_Report.pdf (in French).

³⁹⁹ RTBF article: <https://www.rtbf.be/article/pfas-des-prises-de-sang-individuelles-peu-utiles-sauf-si-c-est-pour-faire-avancer-la-recherche-dit-le-kce-11570057> (in French).

high levels of PFAS. ... The risk of a text in this form is that it delays measures to protect health.⁴⁰⁰

276. Overall, Dr DeWitt's expert report confirms that:

[l]evels of PFAS have been detected in blood samples collected from people across different areas of Belgium, indicating that people across Belgium have been exposed to PFAS.⁴⁰¹

277. The expert report of Professor Jacob de Boer, Emeritus professor of Environmental Chemistry and Toxicology (see Annex C), confirms that all Belgian inhabitants are exposed to PFAS. This emerges from results of PFAS analyses in blood serum samples of Belgian inhabitants who are:

representative of the "average Belgian inhabitant", whose PFAS-concentration in his/her blood is not influenced by a local PFAS-source such as a PFAS factory (e.g., 3M in Zwijndrecht) or a factory using PFAS (e.g., Utebel in Ronse), or a location where PFASs have been used frequently such as a practice location of a fire brigade or an airport, etc. In this way all samples represent "average" Belgian inhabitants.⁴⁰²

278. Data collected in the context of various regional biomonitoring programmes discussed below show that people across Belgium have high levels of PFAS in their blood.

279. **Flanders:** Government-led or -funded human biomonitoring studies, including the Flemish Environment and Health Study (the FLEHS), began to include some PFAS-monitoring in their scope in 2002. However, it was not until the 3M pollution scandal in 2021 that these studies became more systematic and targeted.⁴⁰³

280. There have been five cycles of FLEHS, two of which began before the 3M scandal, and two separate studies relating to the 3M site.

281. **The FLEHS programme:**⁴⁰⁴ The FLEHS encompasses a series of biomonitoring studies in Flanders to provide data on human exposure to various pollutants, including PFOS and PFOA, as well as associated health effects.⁴⁰⁵ PFAS were first measured beginning in 2002 in FLEHS Cycle I (2002–2006), and continued in Cycles II (2007–2011), III (2012–2016) and IV (2017–2021), with the combined cycles including up to 12 different

⁴⁰⁰ RTBF article: <https://www.rtbf.be/article/pfas-des-prises-de-sang-individuelles-peu-utiles-sauf-si-c-est-pour-faire-avancer-la-recherche-dit-le-kce-11570057> (in French).

⁴⁰¹ Dr DeWitt, p.4.

⁴⁰² Reference to Annex C needed.

⁴⁰³ News report covering the results of a small-scale biomonitoring: <https://www.vrt.be/vrtnws/nl/2021/08/04/10-bloedstalen-bij-omwonenden-van-3m-fabriek-tonen-ongezien-hoge/> (in Dutch).

⁴⁰⁴ Schoeters, G., Den Hond, E., Colles, A., Loots, I., Morrens, B., Keune, H., Bruckers, L., Nawrot, T., Sioen, I., De Coster, S., Van Larebeke, N., Nelen, V., Van de Mieroop, E., Vrijens, J., Croes, K., Goeyens, K., Baeyens, W., 2012. Concept of the Flemish human biomonitoring programme. Int. J. Hyg Environ. Health 215, 102e108. <https://doi.org/10.1016/j.ijheh.2011.11.006>.

⁴⁰⁵ Scientific/technical document summarising methodologies for measuring PFAS exposure in humans through biomonitoring: <https://omgeving.vlaanderen.be/sites/default/files/2024-07/Biomarkers%20of%20exposure.pdf> (in Dutch).

PFAS, including a study of participants of different age and risk groups.⁴⁰⁶ A fifth cycle (2022–2027) is underway.

282. FLEHS Cycle I (2002–2006) aimed to establish baseline internal exposure to environmental contaminants, including PFAS.⁴⁰⁷ The results demonstrated that PFAS were already ubiquitous in the Flemish population, with PFOS and PFOA detected in every age group, including umbilical cord blood, thereby confirming in-utero exposure. Concentrations increased from newborns to adolescents and adults, evidencing age-dependent bioaccumulation. Human milk contained multiple PFAS, confirming postnatal exposure among infants. Regional differences pointed to environmental hotspots, and overall levels placed Flanders at the higher end of European PFAS exposure at the time.⁴⁰⁸
283. FLEHS Cycle II (2007–2011) monitored the Flemish population's internal exposure to several chemicals, including PFAS, and assessed trends over time. The blood of 199 adolescents aged 14–15 years was sampled for PFOS and PFOA. For this group, PFOS was detected in 100% of samples, highlighting that virtually all adolescents had measurable PFAS exposure. The human blood monitoring (HBM-I) value was exceeded in 62% and 81% of the participants for PFOS and PFOA, respectively.⁴⁰⁹ Reference values for more than 50 biomarkers were generated.⁴¹⁰
284. The PFAS analysis of the next FLEHS Cycle III (2012–2016) focused particularly on adults aged 50–65 years, with over 200 participants recruited across the five Flemish provinces. PFOS, PFOA, PFHxS and PFNA were found in 100% of the samples. The study also found that 77% of adults exceeded the HBM-I health-based guidance values for PFOS and PFOA.⁴¹¹ Determinants of exposure were found to be age, fish consumption, parity (number of pregnancies), breastfeeding, and consumption of locally produced food. Notably, the study demonstrated that levels of exposure are related to

⁴⁰⁶ Public health factsheet: https://omgeving-en-gezondheid.be/sites/default/files/2024-10/factsheet_PFAS_2021plus.pdf (in Dutch).

⁴⁰⁷ D'Hollander, W., Roosens, L., Covaci, A., Cornelis, C., Smolders, R., Van den Heuvel, R., de Voogt, P., Nobels, I., Van Parys, C., De Coen, W., & Bervoets, L. (2009). *Gebromeerde brandvertragers en perfluorverbindingen in Vlaanderen: onderzoek naar verspreiding, humane opname, gehalten in humane weefsels en/of lichaamsvloeistoffen, en gezondheidseffecten als basis voor de selectie van geschikte milieu- en gezondheidsindicatoren (BFRISK)*. Samenvattend rapport. Departement Leefmilieu, Natuur en Energie (LNE), Vlaamse overheid.

⁴⁰⁸ Roosens L, D'Hollander W, Bervoets L, Reynders H, Van Campenhout K, Cornelis C, Van Den Heuvel R, Koppen G, Covaci A. Brominated flame retardants and perfluorinated chemicals, two groups of persistent contaminants in Belgian human blood and milk. *Environ Pollut*. 2010 Aug;158(8):2546-52. doi: 10.1016/j.envpol.2010.05.022. Epub 2010 Jun 22. PMID: 20573431.

⁴⁰⁹ Colles A, Bruckers L, Den Hond E, Govarts E, Morrens B, Schettgen T, Buekers J, Coertjens D, Nawrot T, Loots I, Nelen V, De Henauw S, Schoeters G, Baeyens W, van Larebeke N. Perfluorinated substances in the Flemish population (Belgium): Levels and determinants of variability in exposure. *Chemosphere*. 2020 Mar;242:125250. doi: 10.1016/j.chemosphere.2019.125250. Epub 2019 Nov 1. PMID: 31896205.

⁴¹⁰ Knudsen, L.; Merlo, D. F. Biomarkers and Human Biomonitoring Volume 1 : Ongoing Programs and Exposures. In: Thomas Graham House, Science Park, Milton Road, 2012; pp. 135–165.

⁴¹¹ Colles A, Bruckers L, Den Hond E, Govarts E, Morrens B, Schettgen T, Buekers J, Coertjens D, Nawrot T, Loots I, Nelen V, De Henauw S, Schoeters G, Baeyens W, van Larebeke N. Perfluorinated substances in the Flemish population (Belgium): Levels and determinants of variability in exposure. *Chemosphere*. 2020 Mar;242:125250. doi: 10.1016/j.chemosphere.2019.125250. Epub 2019 Nov 1. PMID: 31896205.

differences in socio-economic status, emphasising inequity of exposures and presumably also in health risks.⁴¹²

285. FLEHS Cycle IV (2017–2021) focused more specifically on monitoring PFAS exposure trends over time. 600 young people across Flanders participated in the research. Although the final results show declining levels of legacy PFAS such as PFOS and PFOA compared with earlier cycles, the study simultaneously shows that overall PFAS exposure in Flemish adolescents remains high, with persistent exceedances of health-based guidance values and rising concentrations of replacement PFAS such as PFHxS and PFNA. FLEHS IV also confirms that PFAS mixtures continue to pose a significant health concern, and that exposure in Flanders is consistently higher than in many other European regions. These findings indicate that the apparent decline in a few regulated PFAS does not translate into reduced risk: the PFAS burden is shifting rather than disappearing.
286. The current FLEHS V cycle (2022–2027) aims to provide updated reference values and exposure trends, particularly in light of heightened concerns about PFAS contamination in Flanders.
287. **Studies to assess exposure in residents living near 3M:** Following the discovery in 2021 of very high PFOS and PFOA concentrations in soil, groundwater and surface water near the facility, the Flemish Care and Health Agency initiated a series of population studies to assess exposure in residents living near the plant. The scope and results of the two studies are described below.
288. **2021–2022:** The first round of biomonitoring focused on residents living within a three kilometre radius of the 3M site and revealed substantially elevated serum levels of PFOS and PFHxS compared with the general Flemish population.⁴¹³ As outlined in Dr DeWitt's expert report:⁴¹⁴

Serum samples were collected from 796 people living within a 3 km radius of the 3M site and PFOA, PFOS, PFNA, and PFHxS were the main PFAS detected. Values for PFOS and PFHxS were higher in this sample of people than for the general Flemish population, which suggested to the study authors that the 3M site was a local source of these two PFAS as the 3M Company was a major producer of PFOS and PFHxS in the past. The study authors compared levels of PFOA and PFOS to HBM-I and HBM-II values for this sample of people and reported that the blood of nearly 60% of people sampled were above the HBM-II values for PFOS, indicating that long-term adverse health effects were possible. Approximately 25% of people sampled had blood levels of PFOA between the HBM-I and HBM-II values, which indicates that adverse health effects cannot be ruled out.

⁴¹² Morrens, B.; Bruckers, L.; Hond, E. Den; Nelen, V.; Schoeters, G.; Baeyens, W.; Van Larebeke, N.; Keune, H.; Bilau, M.; Loots, I. Social distribution of internal exposure to environmental pollution in Flemish adolescents. *Int. J. Hyg. Environ. Health* 2012, 215, 474–81.

⁴¹³ Flemish Government, Department of Care (2022). *PFAS Population Study Zwijndrecht – Scientific Report – Summary* (updated 24 February 2022):

[https://assets.vlaanderen.be/image/upload/v1742284568/Bevolkingsonderzoek PFAS Zwijndrecht - Wetenschappelijk rapport - Samenvatting - update 240222 pjrxn.pdf](https://assets.vlaanderen.be/image/upload/v1742284568/Bevolkingsonderzoek_PFAS_Zwijndrecht_-_Wetenschappelijk_rapport_-_Samenvatting_-_update_240222_pjrxn.pdf).

⁴¹⁴ Dr DeWitt's report, pp.39-40 (footnotes omitted).

289. **2023–2025:** Subsequent rounds of testing expanded the geographic scope and age groups,⁴¹⁵ confirming that PFAS exposure remained significantly above background levels and that a large proportion of residents exceeded health-based guidance values used in European human biomonitoring. As stated in Dr DeWitt’s expert report:

A larger study of the 3M site conducted by Eurofins on behalf of the Flemish Department of Healthcare between 2023 and 2025 encompassed a broader radius from the site (5 km rather than 3 km). It included 8,568 people. **The study shows that one in two residents has such high levels of PFAS in their blood that harmful health effects cannot be ruled out.** Compared to the smaller-scale blood test from 2021, the overall PFOS levels among residents living near the factory have decreased.⁴¹⁶

290. Further smaller-scale biomonitoring projects in Flanders (see Annex J) indicate that PFAS exposures in the general Flemish population are widespread and high.
291. A letter from the Flemish Department of Health in June 2023 explicitly advised against regionally organised PFAS blood testing near contaminated sites, claiming such studies lack clinical utility, policy impact, and scientific robustness, since PFAS cannot be removed from the body, blood levels cannot be tied to specific sources or outcomes, and results would not alter existing “no regret” measures but risk heightening anxiety.⁴¹⁷ This restrictive stance is problematic: residents in hotspots such as Ronse remain anxious about their health. By contrast, in Zwijndrecht, public authorities have already conducted transparent biomonitoring in hotspots to document disproportionate exposure and reassure affected communities. Denying similar testing elsewhere undermines trust and leaves vulnerable populations without the evidence needed for adequate protection.
292. **Wallonia:** Biomonitoring campaigns launched in 2024–2025⁴¹⁸ revealed that 6-9% of residents in affected areas exceed health-based reference values, confirming widespread exposure across Wallonia. In particular, the residents of the “Feeder du Hainaut” area (named after the large water main supplying the area) have PFAS blood levels systematically higher than those measured in the general Walloon population, across multiple age groups and PFAS compounds.
293. The study conducted by the toxicology laboratory at CHU Liège in 2015 and published in 2020 is generally considered the first PFAS human biomonitoring study specifically focused on Wallonia. PFAS were detected in all 242 participants, and half of them had PFOS and PFOA above HBM-I guidance values.⁴¹⁹
294. Broader government-led biomonitoring campaigns related to PFAS began in 2019. The first biomonitoring results were released in June 2024 but were later withdrawn because

⁴¹⁵ Vlaanderen, *PFAS – VERVUILING, Aanwezigheid van PFAS in de mens*. Available at: <https://www.vlaanderen.be/pfas-vervuiling/aanwezigheid-van-pfas-in-de-mens> (in Dutch).

⁴¹⁶ Dr DeWitt’s report, p. 40 (footnotes omitted) (emphasis added).

⁴¹⁷ Letter from the Flemish Department: https://res.cloudinary.com/deueykgii/image/upload/v1732543557/Zwijndrecht_PFAS_standpunt_Departement_Zorg_regionaal_georganiseerd_bloedonderzoek_bs40dg (in Dutch).

⁴¹⁸ Technical biomonitoring report presenting PFAS blood concentrations in residents from multiple exposure zones in Wallonia: https://www.issep.be/wp-content/uploads/rapport-BMH-PFAS_Feeder_ISSeP_20251112.pdf (in French).

⁴¹⁹ Official parliamentary record: https://ds1.static.rtbf.be/uploader/pdf/a/d/a/beta_70b97cfac7095c790a97bd57debd695.pdf (in French).

they were erroneous.⁴²⁰ In September 2024, Wallonia's Environment Minister admitted the tests had underestimated PFAS levels in blood samples.⁴²¹

295. In February 2026, regional Health and Environment Minister Yves Coppieters announced the launch of a campaign of individual screening to assess PFAS exposure among residents of several areas in Wallonia.⁴²² Since 4 March, a mobile testing centre has been visiting targeted communes to collect blood samples.
296. Farmers, who may be exposed to PFAS through the use of certain pesticides, are subject to a specific biomonitoring programme launched under the Third Walloon Pesticide Reduction Programme.⁴²³
297. **Brussels:** no monitoring programme comparable to what is described above in relation to Flanders and Wallonia appears to exist.

3.4.3 Results of biomonitoring on children in Belgium

298. Belgium has undertaken certain biomonitoring activities focusing on population groups particularly vulnerable to chemical exposure, such as children and nursing mothers. However, such testing has not been conducted systematically across the regions.
299. Nonetheless, several biomonitoring initiatives in Belgium outlined below have assessed PFAS exposure in children, teenagers, and nursing mothers.
300. The FLEHS has measured PFAS concentrations in maternal serum and umbilical cord blood,⁴²⁴ demonstrating that newborns are exposed in utero, with factors such as parity, breastfeeding, and diet greatly impacting internal PFAS levels in children. A 2012 study by Croes et al. brought together results collected between 2009-2010 from 84 breastfeeding mothers from rural communities in East and West Flanders and Flemish Brabant. PFOS concentrations in maternal milk averaged 130 ng/L and PFOA averaged 80 ng/L, reflecting substantial internal exposure among Flemish mothers at that time and serving as an important indicator of early-life exposure to PFAS.⁴²⁵

⁴²⁰ RTL article: <https://www.rtl.be/actu/belgique/societe/pollution-aux-pfas-plus-de-28-de-la-population-testee-chievres-presente-un-taux/2024-06-25/article/683768> (in French).

⁴²¹ RTBF article: <https://www.rtbf.be/article/sous-estimation-des-resultats-des-analyses-pfas-le-ministre-wallon-de-la-sante-explique-les-consequences-pour-les-citoyens-concernees-11438944> (in French).

⁴²² Yves Coppieters, 'PFAS: Launch of Individual Screening in the Affected Areas' (Press Release, Walloon Minister for Health and Environment): <https://coppieters.wallonie.be/home/communiques-de-presse/presses/pfas-demarrage-du-depistage-individuel-dans-les-zones-concernees.html>.

⁴²³ Yves COPPIETERS, *PFAS en Wallonie : le Gouvernement fait le point et renforce son plan d'actions*. Available at : <https://coppieters.wallonie.be/home/communiques-de-presse/presses/pfas-en-wallonie-le-gouvernement-fait-le-point-et-renforce-son-plan-d-actions.html>. and Programme Wallon de Réduction des Pesticides 2023-2027 (PWRP 3) – in French: https://environnement.wallonie.be/files/eDocs%20Environnement/Gestion%20environnementale/Risques%20continus%20et%20pollutions/Pesticides/05.%2020221020_PWRP_III_document%20complet.pdf

⁴²⁴ Roosens L, D'Hollander W, Bervoets L, Reynders H, Van Campenhout K, Cornelis C, Van Den Heuvel R, Koppen G, Covaci A. Brominated flame retardants and perfluorinated chemicals, two groups of persistent contaminants in Belgian human blood and milk. *Environ Pollut*. 2010 Aug;158(8):2546-52. doi: 10.1016/j.envpol.2010.05.022. Epub 2010 Jun 22. PMID: 20573431.

⁴²⁵ Croes K, Colles A, Koppen G, Govarts E, Bruckers L, Van de Mieroop E, Nelen V, Covaci A, Dirtu AC, Thomsen C, Haug LS, Becher G, Mampaey M, Schoeters G, Van Larebeke N, Baeyens W. Persistent organic pollutants (POPs) in human milk: a biomonitoring study in rural areas of Flanders

301. PFAS in adolescents in Flanders have been further studied in the context of the FLEHS study cycles, revealing high PFAS burdens. Notably, during FLEHS II (2010–2011) PFOS and PFOA were measured in 199 adolescents aged 14-15 years old.⁴²⁶
302. Additional research in Flanders has found adolescents near PFAS-contaminated areas (e.g., around the 3M site in Zwijndrecht) have higher PFAS in their blood.⁴²⁷
303. Yet in some cases, the authorities continue to withhold biomonitoring from residents despite evidence of significant contamination, including in areas where schools are located and children are likely to be exposed.⁴²⁸ In the municipality of Ronse, children's blood testing was conducted only at the initiative of parents, who later initiated criminal proceedings against Utexbel.⁴²⁹ Residents have also organised demonstrations, such as on 6 March 2026 and the local NGO Climaxi has criticised the absence of biomonitoring despite blood tests already showing children with PFAS levels more than ten times above European health limits.⁴³⁰
304. In Wallonia, targeted biomonitoring campaigns led by ISSeP (Public Service Wallonia's scientific institute) in PFAS-contaminated areas have measured blood PFAS in residents, which included children under 12, and identified elevated contamination levels exceeding those observed in the general Walloon population.⁴³¹ However, in Wallonia biomonitoring was never conducted with a specific focus on vulnerable groups, including children. This raises particular concerns considering the presence of places such as schools, daycare centres, or playgrounds in contaminated zones.⁴³² It is also concerning given the evidence collected by Belgian researchers on some of the serious harms PFAS could cause to children, notably due to PFAS' endocrine-disrupting properties.⁴³³

(Belgium). *Chemosphere*. 2012 Nov;89(8):988-94. doi: 10.1016/j.chemosphere.2012.06.058. Epub 2012 Jul 26. PMID: 22840535.

⁴²⁶ van Larebeke, N., Koppen, G., Decraemer, S. *et al.* Per- and polyfluoroalkyl substances (PFAS) and neurobehavioral function and cognition in adolescents (2010–2011) and elderly people (2014): results from the Flanders Environment and Health Studies (FLEHS). *Environ Sci Eur* 34, 98 (2022). <https://doi.org/10.1186/s12302-022-00675-3><https://link.springer.com/article/10.1186/s12302-022-00675-3>.

⁴²⁷ Study on youngsters near 3M (Zwijndrecht) confirms health impact of PFAS exposure: <https://vito.be/en/news/study-youngsters-near-3m-confirms-health-impact-pfas-exposure>.

⁴²⁸ PFAS information meeting in Ronse and school-based initial measurements (2025): <https://www.vrt.be/vrtnws/nl/2025/12/16/ronse-pfas-infoavond-school-eerste-metingen/> (in Dutch).

⁴²⁹ Rechtbank eerste aanleg Oost-Vlaanderen, Afdeling Gent, *Rechtbank veroordeelt Utexbel en gedelegeerd bestuurder wegens diverse inbreuken op de milieuwetgeving*. Available at: [News | District Court of First Instance of East Flanders - Ghent Division](#).

⁴³⁰ Article *Ronse: Light parade against PFAS policy*: <https://www.climaxi.be/agenda/ronse-lichtstoet-tegen-pfas-beleid> (in DIn quiryutch).

⁴³¹ Technical summary of the Walloon biomonitoring programme: https://www.issep.be/wp-content/uploads/BMH-PFAS_Feeder_Resume_20251112.pdf

⁴³² News report covering the implementation of water filtration systems in educational and childcare facilities in Tubize: <https://www.lavenir.net/regions/brabantwallon/tubize/2025/04/10/pfas-linstallation-des-filtres-a-commence-dans-les-ecoles-et-creeches-de-tubize-OM4M4DYO7NDMZMENUW5EUSINAI/> (in French).

⁴³³ Belgian researchers have found that exposure to endocrine disruptors can lead to thyroid disruptions as well as neuromotor disorders in children. See: Dufour P, Pirard C, Lebrethon MC, Charlier C. Associations between endocrine disruptor contamination and thyroid hormone homeostasis in Belgian type 1 diabetic children. *Int Arch Occup Environ Health*. 2023 Aug;96(6):869-881. doi: 10.1007/s00420-023-01974-9. Epub 2023 Apr 18. PMID: 37071173; Barrea C, Dufour P, Catherine P, Charlier C, Brevers F, Parent AS, Rousselle L. Neuromotor effects of early-life exposure to a mixture of endocrine disruptors in Belgian preschool children. *Environ Health*. 2025 Mar 17;24(1):11. doi: 10.1186/s12940-025-01156-9. PMID: 40091032; PMCID: PMC11912637.

305. In Brussels, no biomonitoring of children has been undertaken, not even in Uccle, despite the Sicli site's proximity to a school and a sports centre.⁴³⁴
306. A 2023 study of the exposure to PFAS through food in Belgium shows that for each PFAS, the exposure for children is higher than that for adolescents and adults.⁴³⁵
307. Belgian data are further integrated into the HBM4EU European initiative, which harmonises PFAS biomonitoring across countries and age groups, providing comparable exposure metrics for children and teenagers.⁴³⁶ Because of behaviour (hand-to-mouth contact, higher intake relative to body weight) and development, Europe's biomonitoring frameworks flag children as being especially at risk.⁴³⁷ The most common PFAS, i.e. PFOS, PFOA, PFNA and PFHxS, were routinely detected in European teens, with higher levels in Northern and Western Europe versus southern regions.⁴³⁸
308. Collectively, the few studies available indicate that PFAS are ubiquitously detected in the blood of children in Belgium.

3.5 The adverse impacts of PFAS on the health of people in Belgium

309. Much of Belgium's research to date has focused on exposure monitoring, i.e. measuring PFAS in blood, particularly around contaminated industrial sites.
310. The exposure data are clear: PFAS exposure in Belgium is widespread and high, and high exposure is linked to heightened health risks, as outlined in section 2.4.2 above.
311. Belgian federal public health agencies, including the Federal Ministry (FPS) of Public Health, publicly recognise that PFAS are associated with increased cancer risk (kidney, testicular), thyroid disease, reproductive effects, immune suppression, and metabolic changes, based on global epidemiology as well as Belgian data.⁴³⁹
312. Expert testimony reinforces this. Dr DeWitt confirms that PFAS levels detected in Belgian blood samples indicate increased risks of cancers, liver disease, elevated cholesterol, immune dysfunction, and thyroid disease, with prenatal exposure raising the risk of low birth weight in infants.⁴⁴⁰ Dr Grandjean stresses that since virtually all Belgian residents already carry measurable PFAS burdens, any additional exposure, such as living near a hotspot, should be considered adverse, with PFOS, PFOA and PFHxS

⁴³⁴ News report describing PFAS contamination identified at an industrial site in Uccle: <https://www.dhnet.be/regions/bruxelles/2025/06/20/des-pfas-detectes-sur-le-site-dune-entreprise-a-uccle-voici-les-mesures-a-respecter-pour-les-habitants-YBXR3R5W2RD3HJPZJ7UEWYRM7Q/> (in French).

⁴³⁵ Official scientific report from the Belgian public health institute summarising findings on fluorinated substances: https://www.sciensano.be/sites/default/files/fluorex_public_report.pdf.

⁴³⁶ European Human Biomonitoring Initiative report summarising scientific knowledge on PFAS: https://www.hbm4eu.eu/wp-content/uploads/2022/07/PFAS_Substance-report.pdf.

⁴³⁷ Peer-reviewed review article summarising current scientific evidence on PFAS exposure: <https://www.mdpi.com/2075-1729/15/7/1057>.

⁴³⁸ Peer-reviewed biomedical study: <https://pubmed.ncbi.nlm.nih.gov/36327670/>.

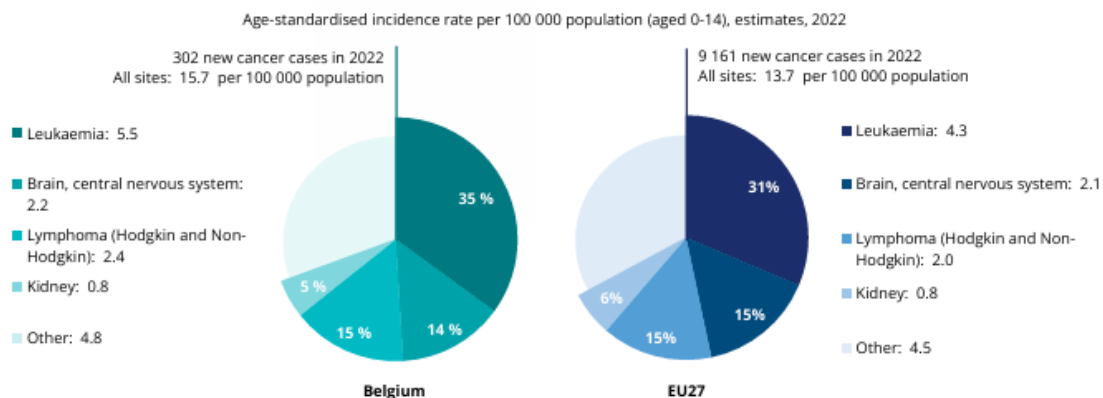
⁴³⁹ Official federal government webpage providing an overview of PFAS as persistent environmental pollutants: <https://www.health.belgium.be/en/themes/environment/gevaarlijke-stoffen-chemische-producten/pfas> (Dutch).

⁴⁴⁰ Dr DeWitt, p.4.

carrying the strongest evidence of harm but other PFAS (PFNA, PFHpA) also being bioaccumulative and toxic.⁴⁴¹

313. Prof De Boer adds that even where guideline values are not exceeded, health risks remain: PFAS are non-degradable and accumulate in humans, and producers can easily substitute one compound for another, perpetuating exposure and risk.⁴⁴²
314. Beyond exposure data, Belgian biomonitoring programmes have begun to document associations with health effects. The FLEHS studies,⁴⁴³ notably, found links between PFAS exposure and neurobehavioral impacts as well as immune disruption, hormonal changes, and effects on growth and puberty among adolescents.
315. While research into cancer incidence around Zwijndrecht is ongoing,⁴⁴⁴ Belgium already has a higher paediatric cancer rate than the European average (157 versus 139 cases per million children in 2022), with leukaemia, brain tumours, and lymphomas most common.⁴⁴⁵ On average, 300-350 Belgian children develop leukaemia or malignant tumours each year, cancers in which early exposure to synthetic chemicals has been implicated.⁴⁴⁶

Figure 20. Cancer incidence rates are higher among children in Belgium than across the EU



Notes: 2022 estimates are based on incidence trends from previous years, and may differ from observed rates in more recent years.
 All sites includes all cancer sites except non-melanoma skin cancer.
 Source: European Cancer Information System (ECIS) for cancer incidence. From <https://ecis.jrc.ec.europa.eu>, accessed on 10 March 2024. © European Union, 2024.

Figure 7. Cancer incidence rates among children in Belgium v. EU (2022) reproduced from European Commission, European Cancer Information System (ECIS)

316. Similar concerns have emerged elsewhere in Europe. In southern France for example, an analysis by Santé Publique France, a national public health agency, shows a significant over-incidence of glioblastomas (brain tumours) – three times more than the national average – in several towns located near major fluorochemical and PFAS-

⁴⁴¹ Dr Grandjean, para. 15 (footnotes omitted).

⁴⁴² De Boer, p. 5.

⁴⁴³ In particular in the context of FLEHS 2 and FLEHS 4, described above.

⁴⁴⁴ Official Flemish government webpage summarising epidemiological studies on cancer incidence in the area surrounding the 3M industrial site: <https://www.vlaanderen.be/pfas-vervuiling/pfas-aanpak-regio-zwijndrecht/pfas-en-kanker-rond-de-3m-fabriek-in-zwijndrecht> (in Dutch).

⁴⁴⁵ OECD / European Commission, *EU Country Cancer Profile: Belgium 2025*, European Cancer Inequalities Registry (ECIR): ec-oecd-be-2024-1659-en.pdf

⁴⁴⁶ Medical information resource from the King Albert II Institute (Belgium) specialising in paediatric oncology: [Le cancer chez l'enfant | Institut Roi Albert II](#) (in French).

producing industrial sites. Local victim associations link these findings to PFAS exposure.⁴⁴⁷ In Sweden, the Ronneby PFAS Research Program at Lund University confirmed a significantly higher incidence of kidney and testicular cancers in the heavily PFAS exposed Ronneby population compared to unexposed regional and national averages.⁴⁴⁸

317. In sum, while Belgian studies have concentrated on exposure, the convergence of biomonitoring data, expert testimony, evidence from other countries and early health-effect findings demonstrate that PFAS contamination poses serious and ongoing risks to public health, particularly for vulnerable populations such as children.

3.6 The lived experiences of people affected by PFAS

318. A number of individual statements annexed to this complaint (see Annex S) illustrate how PFAS exposure is perceived by affected individuals and families and provide evidence of the human health dimension of PFAS contamination in Belgium.
319. Toon Penen, a volunteer at Grondrecht, a local NGO, who is living in Zwijndrecht and whose home is around 1.2km from the 3M factory, noted:

For a long time, I had no idea that I was living in one of the worst PFAS pollution sites in Europe. I did not know that the soil, groundwater, dust, air and the wider environment around us could be contaminated. I trusted that if there was a serious risk, the authorities would tell us clearly and in time.

They did not.

That is one of the hardest parts for me. If I had known earlier, I could have made different choices. I could have been more careful in my garden. I could have avoided contact with the soil. I could have made other choices about food, water and daily life. But I was not given that chance.⁴⁴⁹

320. Hedwig Rومان, who grew up and lives in a small village 15 kilometres from 3M, said:

I tested my blood in February 2023: I had 7,3 µg/L PFOS and 1,4 µg/L PFOA. My daughter's blood was tested in May 2024, she had 3,7 µg/L PFOS and 1,2 µg/L PFOA. According to BFRISK (2009), adolescents in rural areas had in the period of Oct 2003-July 2004, an average of 64,36 µg/L PFOS and 2,85 µg/L PFOA in their blood.

According to a Flemish study on mothermilk (2010), the average of PFAS in rural areas was 120 ng/L for PFOS and 66 ng/L for PFOA.

(Draaiboek moedermelkcampagne voor de gevalstudie 'Gechloroerde verbindingen in het landelijke aandachtsgebied' - januari 2011 2011/Unit/R/36)

Two questions raises:

1) What was my original level of PFAS's in blood, when I was raised as a child, during the period 3M was discharging PFOS?

2) Did my daughter get contaminated during pregnancy or also because of contaminated mothermilk?

As long as I remember, since I'm twelve years old, [in] every medical research on my urine, blood and protein has been found. Between 2018 and 2021, my doctor sended [sic] me to

⁴⁴⁷ "Glioblastomes à Salindres," *Victimes PFAS* <https://victimes-pfas.fr/temoignages/glioblastomes-salindres/> (in French).

⁴⁴⁸ PFAS Research Program, *Ronneby PFAS Research Program: Summary of Research 2014–2023*, <https://pfas.blogg.lu.se/files/2024/03/Ronneby-PFAS-Research-Program-summary-of-research-2014-2023.pdf>.

⁴⁴⁹ See Annex S

an urologist to have a check up, because he was worried about the blood levels in my urine.
 I also suffered from my menstruation since my adolescence, it became worse year by year, finally endometriosis was diagnosed and treated in 2017.
 Since then I use progesterone because I may not have any menstruation any more, blood loss is a risk for my organs.
 I was always the tallest in class. I did have concentration problems too in my adolescence. These are both PFOS features.
 I will never know if PFAS has caused some of my health characteristics, but that's why I defend the precaution principle (better safe than sorry).⁴⁵⁰

321. Toon Penen further explained:

I can no longer look at my garden in the same way. Eating food from the garden no longer feels safe. Children cannot play there without stress or doubt. You start thinking about the soil under their hands, the dust on their clothes, the mud on their shoes. ... This is what PFAS pollution does to daily life. It takes away the normal feeling of safety. It turns ordinary things into questions. Can I touch the soil? Can children play here? Can we eat what grows here? Can I trust my own environment?

322. Laurie Pazienza, from Nandrin, a town which is one of the areas most affected by PFAS contamination in Wallonia,⁴⁵¹ expressed her concern for her sister's state of health:

My concern is even greater when I think of my sister. She suffers from endometriosis, a condition that already affects far too many women and is linked to hormonal imbalances. Knowing that she lives in an area contaminated by substances that directly disrupt the endocrine system only adds to my anxiety. I can't help but wonder whether her condition isn't, at least in part, linked to this exposure.⁴⁵²

323. A concerned father shared the story of his son:

In 2023, A. (aged 10-11) lived part-time in Ronquières, Belgium, in a house supplied by public water and equipped with an advanced filtration system. Despite his parents' [our] careful avoidance of PFAS and other toxic substances in food, cookware, and household products, media investigations later revealed that local tap water exceeded PFAS safety thresholds.⁴⁵³

324. He further shared how the PFAS exposure impacted his family and his son's life and health:

After consulting with his doctor, we took A. to a clinic to have his blood tested for PFAS. The "safety" level for PFAS in the blood is currently estimated at under 2 µg/L. A.'s levels were twice higher. With PFOA and PFOS, particularly toxic members of the PFAS family, causing more than half this exposure. After only one year. Only living there half the time. Despite the sophisticated domestic water filtration system.
 His doctor's recommendation was that while this level was of no immediate concern he had to reduce exposure immediately, and the most straightforward way of doing this was to eliminate the largest sources of PFAS in the food intake: fish, and sea foods more

⁴⁵⁰ Annex S.

⁴⁵¹ See Annex G with the list of the documented PFAS contamination in Belgium.

⁴⁵² Annex S.

⁴⁵³ Annex S.

generally. A., aged 11 at the time, was told he had to stop eating any fish, which he loves, and sea foods, which fortunately he loves much less, for the rest of his life.

We did not tell A. about all the possible health consequences of carrying a relatively high dose of PFAS, particularly PFOS and PFOA, in his blood: as a recent review of the scientific literature indicates, these can include “lipid disorders, hypertension, diabetes mellitus, thyroid disorders, infertility, cancer, obesity, autism, neurodevelopmental issues, cardiovascular diseases, and kidney and liver disorders”. He will learn this by himself soon enough.

For now, we, his parents, are left with the thought that thanks to, probably, the Belgian State’s reluctance to close a polluting site run by a large and powerful company, providing jobs, economic activity and tax revenue, our son has to carry toxic substances in his blood for years, at a level that is twice above what is considered a threshold for concern.

We can only hope he is not harmed by them. We urge the Belgian government to prioritise the future of its children to the profits of companies who are poisoning entire regions, and ban the production and use of all PFAS in the country. We also urge it to take all possible measures to decontaminate the environment, and have the bill paid by the companies responsible for the pollution, who caused it, as well as these companies’ past and current shareholders, who benefited from it.⁴⁵⁴

325. Jean-Baptiste Godinot, in his testimonies, noted:

The Brussels Region’s environmental authority (Bruxelles Environnement) stated in June 2025 that the Sicli site was heavily polluted. However, Bruxelles Environnement had been aware of this information since 2023 and had provided the measurements as part of the Forever Pollution Project. For reasons that remain to be clarified, the authority therefore failed to respond to this alarming contamination for two years and took no action to protect residents from potential contamination.⁴⁵⁵

326. Taken together, these personal accounts demonstrate that PFAS exposure is not abstract or theoretical, but has concrete implications for bodily integrity, mental well-being and family life, particularly in contexts where exposure occurs despite precautionary behaviour and without effective protection by public authorities.

3.7 PFAS legal framework applicable in Belgium

327. The following section presents the legal framework applicable to PFAS in Belgium. It first outlines Belgium’s obligations regarding PFAS under international treaties and EU law. It then explains how responsibilities are divided across different levels of government. Next, it identifies the regulation of PFAS in areas such as water, soil, air, food, and consumer products, with their subsequent monitoring. Finally, it examines key regulatory mechanisms, i.e. permitting procedures, and access to information.

328. At the outset, it is important to recall that the Belgian Constitution expressly guarantees both the protection of health and the protection of the environment. These rights are enshrined in Article 23, which recognises the right of everyone to lead a life in conformity with human dignity and explicitly includes the right to the protection of health and to a healthy environment.⁴⁵⁶

⁴⁵⁴ Annex S.

⁴⁵⁵ Annex S.

⁴⁵⁶ Article 23 of the Belgian Constitution provides that: *“Everyone has the right to lead a life in conformity with human dignity. To this end, the law, the decree or the rule referred to in Article 134 guarantee, taking into account corresponding obligations, economic, social and cultural rights, and determine the*

329. In addition, Article 7bis of the Constitution reinforces these guarantees by requiring the federal State, the linguistic communities, and the regions to pursue sustainable development in the exercise of their competences.

3.7.1 International and EU framework

330. PFAS are not governed by a single comprehensive global treaty. There exists a cluster of chemicals and waste conventions, notably the Stockholm Convention on Persistent Organic Pollutants (POPs),⁴⁵⁷ the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal,⁴⁵⁸ and the Rotterdam Convention on the Prior Informed Consent Procedure,⁴⁵⁹ which together regulate hazardous substances across their lifecycle. Together, these form a complementary international framework for managing hazardous chemicals and wastes (see Annex K). Each treaty addresses a different stage in the lifecycle of hazardous substances.⁴⁶⁰ Belgium is a party to all of them.
331. These are complemented by sector-specific instruments, such as the International Labour Organization Chemicals Convention,⁴⁶¹ which addresses the safe use of chemicals in the workplace, aiming to protect workers from chemical-related hazards, and broader environmental agreements such as the Convention on Biological Diversity⁴⁶² and the Kunming-Montreal Global Biodiversity Framework (GBF)⁴⁶³ adopted under its auspices, which recognise the impacts of chemical pollution on ecosystems.⁴⁶⁴

conditions for exercising them. These rights include in particular:
1° *the right to work and to the free choice of an occupation within the framework of a general employment policy aimed, among other things, at ensuring employment that is as stable and as high as possible, the right to fair working conditions and remuneration, as well as the right to information, consultation and collective bargaining;*
2° *the right to social security, to the protection of health, and to social, medical and legal assistance;*
3° *the right to decent housing;*
4° *the right to the protection of a healthy environment;*
5° *the right to cultural and social fulfilment;*
6° *the right to family benefits."*

⁴⁵⁷ The Stockholm Convention on Persistent Organic Pollutants was adopted at a Conference of Plenipotentiaries on 22 May 2001 in Stockholm, Sweden. It entered into force on 17 May 2004. Belgium is party to the Stockholm Convention, which entered into force for the country in August 2006. See <https://www.pops.int/>.

⁴⁵⁸ The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was adopted on 22 March 1989 in Basel, Switzerland, and entered into force on 5 May 1992. Belgium is a Party to the Basel Convention, which entered into force for the country in 1993. See: [Basel Convention > The Convention > Overview](#).

⁴⁵⁹ The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was adopted on 10 September 1998 in Rotterdam, the Netherlands, and entered into force on 24 February 2004. Belgium is a Party to the Rotterdam Convention, for which it entered into force in 2004. See: [Rotterdam Convention - Home page](#).

⁴⁶⁰ See Annex L, for specific details on the applicability of these treaties to PFAS.

⁴⁶¹ Convention (No. 170) concerning safety in the use of chemicals at work. Adopted by the General Conference of the International Labour Organisation on 25 June 1990. Belgium is a Party to ILO Chemicals Convention, which entered into force for the country in 2017. See: [C170 - Chemicals Convention, 1990 \(No. 170\)](#).

⁴⁶² The Convention on Biological Diversity (CBD) entered into force on 29 December 1993 [Text of the Convention](#).

⁴⁶³ The GBF was adopted at the 15th Conference of the Parties under the CBD and sets out four long-term goals for 2050 and 23 targets to be achieved by 2030.

⁴⁶⁴ See Annex K.

332. As an EU Member State, Belgium is bound by EU law. The EU's approach to regulating PFAS can be characterised as piecemeal, regulating individual PFAS in different ways. In 2020, the EU signalled a change of approach with the adoption of the Chemicals Strategy for Sustainability.⁴⁶⁵ In this strategy, part of the European Green Deal, the European Commission committed to phase out PFAS in all non-essential uses and established an action plan for doing so.⁴⁶⁶ The document proposed a coordinated approach to regulate PFAS across different legislative frameworks, combining restrictions on production and use with measures to control and reduce emissions. It also called for research and innovation to develop alternatives, expand enforcement and monitoring, and strengthen the liability framework. The European Green Deal policy framework ended in 2024 without delivering that coordinated approach.
333. A piecemeal approach therefore still prevails and the legal framework includes various EU regulations (which apply directly as part of the law of the Member States) and directives (which must be transposed into national law), with direct or indirect application to limited types of PFAS.⁴⁶⁷ Their list is provided in annex to this complaint (see Annex L).
334. The EU framework covers production, use and emissions only for certain substances and sectors, leaving significant gaps. A key development is the proposal for an EU-wide PFAS restriction under the REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation,⁴⁶⁸ introduced in 2023 by Denmark, Germany, the Netherlands, Norway, and Sweden, covering most uses with limited exemptions for essential applications.⁴⁶⁹
335. In March 2026, ECHA's scientific committees – the Risk Assessment Committee (RAC) and the Socio-Economic Analysis Committee (SEAC) – supported this broad PFAS restriction. RAC, in its final opinion, found an EU-wide restriction on manufacture, use, and placing on the market to be the most appropriate measure, potentially reducing emissions by around 96% over 30 years.⁴⁷⁰ SEAC, in its draft opinion, also endorsed the restriction while continuing to assess socio-economic impacts, including possible derogations.⁴⁷¹ Although ECHA supports a far-reaching restriction, the process is

⁴⁶⁵ European Commission, *Chemicals Strategy*: https://environment.ec.europa.eu/strategy/chemicals-strategy_en.

⁴⁶⁶ There is a timeline on previous and upcoming actions available at [Chemicals strategy - Environment - European Commission](#) (the last information from 22 April 2024 that EC proposed criteria to define the essential use of most harmful chemicals). The Chemicals Strategy for Sustainability outlines over 80 actions, and sets an [indicative timing](#) for their implementation. The Commission provides a regular update of the state of implementation of the actions in the [tracking table](#).

⁴⁶⁷ See Annex M, for specific details on the applicability of the EU law to PFAS.

⁴⁶⁸ Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) [Regulation - 1907/2006 - EN - REACH - EUR-Lex](#)

⁴⁶⁹ ECHA European Chemicals Agency, *Registry of restriction intentions until outcome*. Available at: <https://echa.europa.eu/fr/registry-of-restriction-intentions/-/dislist/details/0b0236e18663449b>.

⁴⁷⁰ EEB European Environmental Bureau, *A roadmap to nowhere? The EU's bold plan to quit the most harmful chemicals is a year old. We assess its effectiveness*. Available at: <https://eeb.org/library/a-roadmap-to-nowhere-the-eus-bold-plan-to-quit-the-most-harmful-chemicals-is-a-year-old-we-assess-its-effectiveness/>.

⁴⁷¹ A public consultation on the SEAC draft opinion took place until 25 May 2026. The SEAC is now using the results from the consultation to finalise its opinion.

ongoing and adoption is unlikely before 2027–2028 and faces significant economic and political resistance.⁴⁷²

336. Until then, Member States may adopt national measures under the subsidiarity principle and Article 128(2) REACH.⁴⁷³
337. Several countries have already tightened PFAS rules, particularly for water standards (e.g., Denmark,⁴⁷⁴ Sweden,⁴⁷⁵ Italy⁴⁷⁶ and UK⁴⁷⁷) and product restrictions (e.g., Denmark, France⁴⁷⁸). Similar regulatory trends are observed globally (e.g., USA, Canada, Norway, Japan, New Zealand), reflecting a shift toward a more comprehensive and preventive approach. Those restrictions are listed in Annex P.

3.7.2 Division of competences in Belgium

338. In matters related to PFAS, for the protection of the environment and health, competence is shared between the federal government and the Flanders, Walloon and Brussels regions. Some public health matters are also the responsibility of the linguistic communities (Dutch, French, and German), but for the sake of simplicity the focus here is on the division between the federal and regional levels.

⁴⁷² See for example: <https://cefic.org/media-corner/newsroom/cefic-statement-on-the-pfas-restriction/>, or <https://www.edsoforsmartgrids.eu/edso-publications/joint-statement-from-power-industries-on-pfas-ban/>. There is well-documented evidence that the PFAS industry has actively lobbied to influence how governments regulate these chemicals. For example, in Europe, investigations by organisations such as Corporate Europe Observatory and the Forever Lobbying Project describe coordinated lobbying campaigns by major chemical producers and trade associations to shape the EU's proposed restrictions on PFAS. These groups have submitted extensive comments to consultations, met frequently with EU officials, and promoted talking points arguing against broad bans or class-based regulation, see: <https://corporateeurope.org/en/pfas-are-forever>. Some reports also highlight potential conflicts of interest, where consultants advising EU regulators on PFAS policy have had parallel links to companies producing PFAS, SEE: Jose Miguel Calatayud, Stéphane Horel, Sarah Pilz, and Daniel Värjö, and edited by Craig Shaw and Himanshu Ojha, *The forensics of the plastic industry disinformation campaign to defend PFAS*, 14 January 2025, <https://foreverpollution.eu/lobbying/the-disinformation-campaign/>.

⁴⁷³ If an EU PFAS restriction is adopted, it will directly apply and take precedence over national laws. Member States will have to enforce it in. Even in that event, Member States will always retain a residual competence to consider implementing additional or stricter measures on the basis of: Article 129(1) REACH in order to respond to an urgent situation to protect human health or the environment, and after notifying the Commission, ECHA and other Member States with reasons for its decision, or Article 114(5) TFEU on the basis of new scientific evidence relating to the protection of the environment on grounds of a problem specific to that Member State arising after the adoption of the harmonization measure.

⁴⁷⁴ Denmark has established advisory reference values for groundwater that mirror its drinking water standards: either 0.002 mg/L (2 ng/L) for the sum of four PFAS (PFOA, PFOS, PFNA, PFHxS) or 0.1 mg/L for the sum of 22 PFAS, which aligned their drinking water standards for PFAS with the more precautionary limits seen in the United States.

⁴⁷⁵ Sweden has had guideline limits in place since early 2023 for drinking water: 4 ng/L for PFAS-4 and 100 ng/L for PFAS-20.

⁴⁷⁶ In Italy, the threshold for PFOS in groundwater is set at 0.03 mg/L, or 6.5×10^{-4} mg/L in areas where groundwater interacts with surface water. Italy also regulates four additional PFAS compounds. Transposition of Commission Directive 2014/80/EU of 20 June 2014 amending Annex II to the Groundwater Directive : <https://www.gazzettaufficiale.it/eli/id/2016/07/16/16A05182/sq> (in Italian).

⁴⁷⁷ UK has set a limit of 100 ng/L but extends this to cover 47 different PFAS compounds, compared to the 20 typically monitored in the EU.

⁴⁷⁸ Denmark has banned PFAS in paper and cardboard food packaging since 2020, as well as PFAS in consumer textiles; France has adopted a national ban on PFAS in cosmetics, ski wax (fart), textiles and clothing, shoes, and water-repellent agents for textiles and footwear.

339. While the regions have primary responsibility in terms of environmental policy, including permitting of polluting activities and protection of the local environment,⁴⁷⁹ the federal State is responsible for product norms as well as basic legislation on health care and health promotion.

340. As outlined in the expert opinion of Mr Tangui Vandenput, a barrister practising in Brussels, the Belgian state:

can legally adopt various measures against PFAS, which adequately respond to the proportionality test (ban, sector-based restrictions, substitution, rejection standards, site management, etc.). Similar measures have already been adopted for other harmful substances, such as PCBs, asbestos or lead.⁴⁸⁰

341. For the moment, as described below, PFAS regulation is fragmented across different levels of governance.

3.7.3 Belgium's PFAS regulatory and monitoring framework

342. Belgium's PFAS regulatory and monitoring framework is highly fragmented across sectors and levels of governance, with regions responsible for the environment (water, soil, air) and the federal level overseeing product-related standards (such as food, bottled water, consumer goods, and pesticides).⁴⁸¹ See Annexes M and N for more detailed information on the Belgian PFAS -related legal framework. The rules vary significantly: binding values for drinking water are partly harmonised under EU law but applied unevenly across regions;⁴⁸² soil regulation remains inconsistent, with binding standards only in Brussels and largely guidance-based approaches elsewhere;⁴⁸³ and air regulation is particularly underdeveloped, with no binding PFAS thresholds or systematic monitoring. Monitoring obligations are often reactive rather than proactive – triggered by specific circumstances such as permits or site assessments. In all three regions, water utilities are legally responsible for monitoring drinking water quality, under the supervision of the regional authorities.⁴⁸⁴ At federal level, food and product monitoring is more structured and driven by EU legislation, though gaps remain,

⁴⁷⁹ The Regions are, inter alia, competent in respect of: land-use planning; nature protection and conservation; soil, water, and air protection and noise control; waste policy; water production and supply; control of industrial activities.

⁴⁸⁰ See Annex O.

⁴⁸¹ In these domains, monitoring and enforcement falls primarily within the mandate of federal agencies, in particular the AFSCA for food, the FPS (federal ministry) Public Health, Food Chain Safety, and the Environment for human health and pesticides, and the FPS Economy for consumer products.

⁴⁸² Flemish Government Decree of 20 January 2023: *Besluit van de Vlaamse Regering van 20 januari 2023 over de kwaliteit, kwantiteit en levering van water bestemd voor menselijke consumptie*. The Brussels-Capital Region Government Decree of 22 February 2024 *Arrêté du Gouvernement de la Région de Bruxelles-Capitale du 22 février 2024 relatif à la qualité des eaux destinées à la consommation humaine*.

⁴⁸³ In Wallonia under the Walloon Soil Decree, in Brussels under the Brussels Soil Ordinance and in Flanders under the Flemish Soil Decree.

⁴⁸⁴ In Wallonia, monitoring is done by multiple water suppliers, the principal being the SWDE (*Société Wallonne des Eaux*), under the supervision of SPW ARNE (*Service public de Wallonie Agriculture, Ressources Naturelles et Environnement* – Walloon Public Service for the Environment). In Brussels, the only supplier, Vivaqua, is responsible for monitoring distribution water and reports results to Bruxelles Environnement. In Flanders, the six water distributors (the principal one being De Watergroep) are responsible for monitoring drinking water quality, and monitoring is overseen jointly by the Flemish Environment Agency (VMM) and the Flemish Department of Health (*Departement Zorg*).

including limited coverage for certain food categories,⁴⁸⁵ absence of PFAS-specific rules for consumer goods,⁴⁸⁶ and case-by-case pesticide approvals.⁴⁸⁷

3.7.4 Permitting of PFAS-related industrial activities

343. Some activities involving PFAS are regulated through general environmental permitting systems.⁴⁸⁸ In all three regions, facilities or activities likely to emit or use PFAS must obtain an environmental permit, but there is no dedicated authorisation regime specifically for PFAS. Instead, PFAS-related conditions are incorporated into general or site-specific permit conditions,⁴⁸⁹ often linked to broader sectoral rules or EU requirements such as the Industrial Emissions Directive (IED), an EU pollution-control measure.⁴⁹⁰
344. While these systems may impose emission limits, monitoring obligations, and mitigation measures,⁴⁹¹ they are inherently localised and reactive. Permit conditions apply only to individual sites and do not address the cumulative and long-term presence of PFAS across the territory. As such, they cannot substitute for comprehensive, preventive measures aimed at reducing overall PFAS emissions or eliminating exposure at source.
345. This structural limitation is reflected in practice. Oversight remains extremely limited, with only a negligible number of installations inspected for PFAS emissions – of the 1,917 plants located in Flanders potentially handling PFAS and falling under the scope of the IED, only eight had been checked for PFAS emissions by the end of 2024. A further 12 were planned to be checked in 2025.⁴⁹² Permits continue to be granted or renewed for PFAS-emitting activities despite evidence of contamination,⁴⁹³ sometimes

⁴⁸⁵ Regulation 2023/915 does not establish maximum permissible levels for PFAS in milk, meaning that previously applied national action limits continue to be used in practice for that product category.

⁴⁸⁶ To date, Belgium has not adopted any dedicated national legislation specifically targeting PFAS in consumer goods. Instead, the regulatory framework is primarily derived from EU law, which is directly applicable or transposed into national law. In particular, Belgian authorities implement restrictions on certain PFAS under the REACH Regulation, alongside relevant sector-specific EU legislation governing products such as cosmetics, medical devices, and packaging. All legally authorised pesticides and conditions of use are found in the Phytoweb Authorisation Database.

⁴⁸⁷ There are no PFAS-specific screening or general restrictions, which means that they must be assessed product by product at the time of approval.

⁴⁸⁸ *Décret Sols* in Wallonia, *Ordonnance Sols* in Brussels, and *VLAREM* in Flanders.

⁴⁸⁹ Non-classified operations that handle hazardous chemicals such as PFAS may also be required to comply with specific regulations, e.g. with regard to waste management.

⁴⁹⁰ Directive 2010/75/EU.

⁴⁹¹ In all regions, if a permit is granted, it is subject to general, sectoral and, where applicable, individual operating conditions. These may include emission or discharge thresholds, monitoring obligations, and mitigation measures specific to PFAS.

⁴⁹² Parliamentary question and answer of 28 January 2025 on new review values for PFAS in air and deposition: <https://www.vlaamsparlement.be/nl/parlementair-werk/commissies/commissievergaderingen/1860557/verslag/1861530> (in Dutch).

⁴⁹³ Authorisations for PFAS-emitting industrial installations are extended such as the Allnex Drogenbos plant at the Brussels-Flanders border, notwithstanding evidence of PFAS discharges into the Senne: <https://omgevingsloketinzage.omgeving.vlaanderen.be/2025151430> (in Dutch). The Tenneco plant in Limburg was also granted new permits provided that it adheres to certain conditions, yet considered too lenient by local associations of residents: <https://www.vrt.be/vrtnws/nl/2025/05/21/vlaamse-regering-wijst-beroep-tegen-vergunning-schokdemperfabrie>. In Wallonia, PFAS-using industries continue to operate under permits that contain PFAS-specific emission limits, effectively enabling ongoing releases: In a parliamentary question from 07.11.2026 to the Environment Minister Yves Coppieters, MEP Anne-Catherine Goffinet asks whether the Wallonia government will modernise environmental permits with a view to integrating PFAS norms and emission limits: <https://www.parlement-wallonie.be/pwpages?p=interp-questions-voir&type=28&iddoc=139398>.

even following judicial findings of inadequate risk assessment.⁴⁹⁴ In some regions, permits lack PFAS-specific emission limits altogether.⁴⁹⁵

346. Although environmental impact assessments, public participation procedures, and enforcement mechanisms formally exist,⁴⁹⁶ they have not ensured effective prevention or control of PFAS pollution. Even where specific measures have been introduced, such as in Flanders, they remain partial and do not amount to a comprehensive regulatory framework.⁴⁹⁷
347. Belgium's reliance on permit-based controls results in fragmented, site-specific management of PFAS that fails to account for their persistence, accumulation and widespread impact, and is therefore insufficient to protect health or prevent long-term contamination.

Part IV: Requirements Under the Charter in Light of Other International Standards

348. This section outlines the requirements arising under Article 11 of the Charter relevant to the present collective complaint as clarified by the Committee and in the light of international standards and rulings that guide Article 11's interpretation.

4.1 General framework and interpretation of Article 11 of the Charter

349. Article 11 of the Charter reads as follows:

Article 11 (Everyone has the right to benefit from any measures enabling him to enjoy the highest possible standard of health attainable)

With a view to ensuring the effective exercise of the right to protection of health, the Parties undertake, either directly or in cooperation with public or private organisations, to take appropriate measures designed inter alia:

- 1 to remove as far as possible the causes of ill-health;
- 2 to provide advisory and educational facilities for the promotion of health and the encouragement of individual responsibility in matters of health;

⁴⁹⁴ In Flanders, permits for PFAS-affected soil works linked to the Oosterweel project were repeatedly re-issued following court suspensions, allowing operations to continue despite judicial findings of inadequate PFAS risk assessment.

⁴⁹⁵ PwC Legal, *PFAS in Belgium – From awareness to accountability and remediation*.

[PFAS in Belgium – From awareness to accountability and remediation](#)

⁴⁹⁶ Every project, even if of limited size, is subject to the EIA screening obligation in Flanders (see, e.g. the 'threshold-free' Annex III to the Flemish Government's decree of 10 December 2004 establishing the categories of projects subject to environmental impact assessment: <https://navigatorm.emis.vito.be/detail?wold=267>). Across all regions, depending on the type and size of the activity, the granting of an environmental permit must be preceded by an environmental impact assessment and involve public participation. Where PFAS presence is established or suspected, the assessment must cover health and cumulative effects (For example, see Article 4.3.1(2) of the Decree of 5 April 1995 containing general provisions on environmental policy).

⁴⁹⁷ PwC Legal, *PFAS in Belgium – From awareness to accountability and remediation*: [PFAS in Belgium – From awareness to accountability and remediation](#).

3 to prevent as far as possible epidemic, endemic and other diseases, as well as accidents.

350. The right to protection of health under Article 11 of the Charter is intrinsically linked to human dignity, which constitutes the fundamental value underpinning human rights law⁴⁹⁸ and Council of Europe standards.⁴⁹⁹ The protection of health is not merely instrumental, but a prerequisite for the preservation of human dignity; States must safeguard both the physical and psychological integrity of individuals as an integral component of the right to health.⁵⁰⁰
351. At the same time, the Committee has highlighted that the Charter is a living instrument, whose purpose is to protect rights not merely theoretically but also in fact.⁵⁰¹ Accordingly, the Committee has made it clear that:

In connection with means of ensuring steady progress towards achieving the goals laid down by the Charter, ... the **implementation of the Charter requires state parties not merely to take legal action but also to make available the resources and introduce the operational procedures necessary to give full effect to the rights specified therein.**⁵⁰²

352. The Committee has consistently interpreted Article 11 of the Charter as encompassing a right to a healthy environment, insofar as environmental conditions directly affect the enjoyment of the right to health.⁵⁰³ Moreover, it has recognised that environmental pollution can have harmful effects on human health and life.⁵⁰⁴ This understanding is consistent with international developments as recently underlined by the International Court of Justice in its Advisory Opinion, Obligations of States in respect of Climate Change:

a clean, healthy and sustainable environment is a precondition for the enjoyment of many human rights, such as the right to life, the right to health.⁵⁰⁵

⁴⁹⁸ Universal Declaration of Human Rights, preamble, Article 1.

⁴⁹⁹ *S.W. v United Kingdom*, judgment of the European Court of Human Rights of 22 November 1995, § 44 *in fine*; Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine ("The Oviedo Convention"), Article 1.

⁵⁰⁰ *International Federation of Human Rights Leagues (FIDH) v. France*, Collective Complaint No. 14/2003, decision on the merits of 8 September 2004, § 31; *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 196 and 202. See, also, The Oviedo Convention, Article 2 ("The interests and welfare of the human being shall prevail over the sole interest of society or science").

⁵⁰¹ *International Commission of Jurists v. Portugal* (Complaint No. 1/1998), decision on the merits of 9 September 1999, §32. See, also, International Court of Justice, Advisory Opinion on the Obligations of States in Respect of Climate Change, 23 July 2025, § 393 ("under international law, the human right to a clean, healthy and sustainable environment is essential for the enjoyment of other human rights").

⁵⁰² *International Movement ATD Fourth world v. France*, Complaint No 33/2006, decision on the merits, 5 December 2007, at para 61 (emphasis added).

⁵⁰³ E.g., *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 195 and *European Roma Rights Centre (ERRC) v. Bulgaria*, decision on the merits, 3 December 2008, para. 47.

⁵⁰⁴ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 200.

⁵⁰⁵ [Advisory Opinion of 23 July 2025](#).

353. The interconnection between human health, environmental integrity and animal health is now well-established, with risks to human health often originating from disruptions to ecosystems and environmental processes.⁵⁰⁶
354. Thus, UN Special Rapporteur on toxics has emphasised that a healthy environment must, in substance, be understood as a non-toxic environment,⁵⁰⁷ underscoring that exposure to hazardous substances is fundamentally incompatible with the enjoyment of human rights, including the right to health. This reinforces the interpretation of Article 11 of the Charter as requiring States to prevent exposure to toxic substances as a core component of their obligations.⁵⁰⁸
355. In 2026, the UN Special Rapporteur on toxics even launched a global call for input to inform a thematic report to the Human Rights Council specifically dedicated to PFAS and human rights. This initiative underscores that PFAS, due to their persistence, bioaccumulation and toxicity, raise systemic human rights concerns, including impacts on the rights to health, physical integrity, safe drinking water and sanitation, and a clean, healthy and sustainable environment. It also highlights the need to examine gaps in existing national, regional and international regulatory frameworks, clarify the responsibilities of States and business actors, and strengthen accountability and access to remedies for affected individuals and communities.⁵⁰⁹

4.2 Article 11(1) and (3) of the Charter – removal of the causes of ill-health and prevention of health risks

356. Article 11(1) and (3) of the Charter require States Parties to adopt comprehensive measures aimed at removing the causes of ill-health and preventing diseases and other threats to health. Read together, these provisions establish a general obligation on States to identify, regulate and mitigate health risks, including those arising from environmental factors. These provisions must be understood as imposing an integrated obligation on States to address existing causes of ill-health and foreseeable risks to health in a preventive and proactive manner.

4.2.1 Environmental determinants of health

357. The Committee has made clear that failure to regulate environmental risks may constitute a violation of Article 11 of the Charter in situations where States do not adequately regulate, control and mitigate harmful pollution, whether affecting air, water or soil. This approach is illustrated in cases where the State has: inadequately regulated industrial emissions from lignite mining;⁵¹⁰ not managed hazardous waste properly;⁵¹¹

⁵⁰⁶ See, e.g., the [One Health](#) approach of the World Health Organization.

⁵⁰⁷ The right to a clean, healthy and sustainable environment : non-toxic environment : report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment ([A/HRC/49/53](#)), para. 3.

⁵⁰⁸ *Ibid.*, para. 50.

⁵⁰⁹ United Nations, *Call for input - Forever Chemicals (PFAS) & Human Rights*. Available at: <https://www.ohchr.org/en/calls-for-input/2026/call-input-forever-chemicals-pfas-human-rights>

⁵¹⁰ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006.

⁵¹¹ *International Federation for Human Rights (FIDH) v. Greece*, Complaint No. 72/2011, decision on the merits, 23 January 2013.

and been inactive in ensuring access to safe water and adequate sanitation, exposing particularly vulnerable communities to serious health risks.⁵¹²

358. The reasoning and legal standards set out by the Committee have been affirmed by recent developments in the case law of the European Court of Human Rights.⁵¹³ In *Cannavacciuolo and Others v. Italy*,⁵¹⁴ the Court found a violation of Article 2 of the European Convention on Human Rights due to the prolonged and unaddressed exposure of residents to environmental pollution. The judgment confirmed, in line with the principles developed under Article 11 of the Charter, that States have positive obligations to protect individuals from foreseeable environmental risks to life and health. The judgment had a systemic character: the Court, usually, found that all applicants who were living in the affected area were victims of a violation, by mere virtue of living in that area. Even in the absence of “scientific certainty about the precise effects the pollution may have had on the health of a particular applicant”, Italy owed a duty to everyone living in the so-called Terra dei Fuochi municipalities affected by pollution.⁵¹⁵

4.2.2 Systemic obligations: the legal, policy, and monitoring framework

359. The Committee has acknowledged that:

Overcoming environmental pollution is an objective that may only be achieved progressively. Nevertheless, States Parties are required to pursue this objective within a reasonable timeframe, by demonstrating measurable progress and making the best possible use of the resources at their disposal.⁵¹⁶

and that:

Where the realisation of Charter rights proves particularly complex or costly, States Parties must adopt measures capable of achieving the objectives of the Charter within a reasonable period, with measurable progress, and in a manner consistent with the maximum use of available resources. Particular attention must be paid to the impact of such measures on groups in situations of heightened vulnerability, as well as on other persons affected.⁵¹⁷

360. Further, the Committee has found that:

In order to fulfil their obligations, national authorities must ... ensure that environmental standards and rules are properly applied, through appropriate supervisory machinery.⁵¹⁸

⁵¹² *European Roma Rights Centre (ERRC) v. Portugal*, Complaint No. 61/2010, decision on the merits, 30 June 2011.

⁵¹³ See generally the ECtHR’s factsheet on the environment: <https://rm.coe.int/thematic-factsheet-env-eng/488029d2b4>.

⁵¹⁴ No. 51567/12, judgment of 30 January 2025.

⁵¹⁵ *Ibid.*, § 391.

⁵¹⁶ See, *mutatis mutandis*, *Autism Europe v. France*, Complaint No. 13/2002, decision on the merits of 4 November 2003, at para. 53 and *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits, 6 December 2006, para. 204.

⁵¹⁷ *Autism Europe v. France*, Complaint No. 13/2002, decision on the merits of 4 November 2003, para. 53.

⁵¹⁸ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 203.

4.2.3 Preventive approach and precautionary principle

361. Not only must States respond to pollution posing risks to health; they must also adopt proactive, concrete, and effective measures to ensure that the right to protection of health is fully respected, protected and fulfilled in practice.
362. Thus, with respect to the prevention of risks to health, the Committee has emphasised that:

precautionary measures are a key aspect of the right to protection of health. This implies that when a preliminary scientific evaluation indicates that there are reasonable grounds for concern regarding potentially dangerous effects of virus or other factors on human health, then the States Parties must take adequate measures to prevent those risks.⁵¹⁹

363. Further, under international human rights law, States have a clear obligation to prevent exposure to hazardous substances, as reiterated by the UN Special Rapporteur on toxics.⁵²⁰ The UN Special Rapporteur further highlights that the existence of the State's duty to prevent exposure is reinforced by the right to full respect for the bodily integrity of the person, which helps to provide context to the extent to which every person should have the right to control what happens to her/his body.⁵²¹ This aligns with the Committee's approach to the protection of health as a prerequisite for the preservation of human dignity.
364. This duty of prevention, as affirmed by the UN Special Rapporteur on toxics, also requires States to apply the precautionary principle by acting decisively to prevent exposure to hazardous substances even in the absence of full scientific certainty.⁵²²
365. In this connection, PFAS have been identified by the UN Special Rapporteur as a key example of deficiencies by States regarding their respective duties and responsibilities to prevent exposure to hazardous substances; the continued use of persistent substances such as PFAS demonstrates structural deficiencies in regulatory systems, particularly the failure to adopt precautionary, class-based approaches.⁵²³

4.2.4 Health system obligations and response to environmental risks

366. The Committee has confirmed that States' obligations under Article 11 of the Charter are not limited to individual medical care but extend to the protection of the population from environmental conditions that pose a risk to health, including diffuse and cumulative

⁵¹⁹ [Statement of interpretation on the right to protection of health in times of pandemic](#) (adopted 21 April 2020).

⁵²⁰ Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes – Duty to prevent exposure, [A/74/480](#), 2019, para. 6.

⁵²¹ Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, [A/HRC/39/48](#), para. 20.

⁵²² Right to science in the context of toxic substances – Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, 26 July 2021, [A/HRC/48/61](#), para. 62.

⁵²³ Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes – Duty to prevent exposure, [A/74/480](#), 2019, para. 62-65 (footnotes omitted). A “class-based” approach would mean, for example, restricting or banning PFAS as a whole, as opposed to targeting specific types of PFAS.

pollution. This is the case even where the full scale of harm may only become evident over time.⁵²⁴

367. In this respect, the UN Special Rapporteur on toxics highlights that the “toxic cocktail” of exposure to multiple hazardous substances

is conservatively calculated as being the single largest source of premature death in the world, and it causes and contributes to a silent pandemic of diseases and disabilities.⁵²⁵

368. The Committee has made it clear that States must ensure that health systems are accessible, effective and capable of responding appropriately to avoidable health risks, including those arising from environmental contamination, through early detection, medical screening and ongoing health monitoring.⁵²⁶
369. Where populations are exposed to environmental hazards, the Committee has required States to ensure access to diagnostic testing, epidemiological surveillance and preventive healthcare measures. In *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*,⁵²⁷ the Committee stressed the importance of epidemiological monitoring of affected populations and the assessment of health impacts as part of States’ obligations to protect health under Article 11 of the Charter.

4.2.5 Enhanced protection of children

370. The Committee has consistently emphasised that situations of heightened vulnerability require enhanced levels of protection. States must ensure that public health measures are designed not only for the population as a whole, but also to address the specific needs of groups at greater risk, including children and pregnant women.⁵²⁸
371. The Committee’s approach is entirely appropriate, given the broader international obligation on States to take into account the best interests of children as primary consideration in decision-making, guaranteed by Article 3 (1) of the Convention on the Rights of the Child (CRC).
372. Further, in respect of children’s health and environmental pollution, Article 24 of the CRC expressly affirms the obligation of States to recognise the right of the child to the highest attainable standard of health, including through measures that take into account the dangers and risks of environmental pollution.⁵²⁹
373. Building on this provision, the Committee of the Rights of the Child (hereinafter “the CRC Committee”) has clarified that the right to health is inclusive, extending beyond health care services to encompass the underlying determinants of health, including environmental conditions necessary for children to develop to their full potential.⁵³⁰

⁵²⁴ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006; *International Federation for Human Rights (FIDH) v. Greece*, Complaint No. 72/2011, decision on the merits, 23 January 2013.

⁵²⁵ [A/73/567](#): First report of the Special Rapporteur on toxics and human rights to the General Assembly

⁵²⁶ see *Conclusions XV-2 (2001)*, *Denmark*; *Conclusions 2005*, *Lithuania*.

⁵²⁷ Complaint No. 30/2005, §§ 203 and 220.

⁵²⁸ Conclusions I (1969), Statement of Interpretation on Article 11.

⁵²⁹ CRC, Article 24(2)(c).

⁵³⁰ CRC [CRC/C/GC/15](#) on health (2013), para. 2. See also: Children and health: <https://docs.un.org/en/A/70/213> - UN Special Rapporteur on the human right to a clean, healthy and

374. Furthermore, the CRC Committee has emphasised the relationship between children's health and maternal health, noting that parental health and environmental exposures significantly affect children's health outcomes.⁵³¹
375. In line with this approach, in its General Comment No. 26 (2023), the CRC Committee has highlighted that younger children are particularly vulnerable to environmental hazards due to their physiology and developmental stages. Exposure to toxic pollutants – even at low levels – during critical developmental periods can cause long-term and even intergenerational harm.⁵³²
376. Consequently, the CRC Committee has affirmed that children have a right to a clean, healthy and sustainable environment,⁵³³ and has called on States to regulate and, where appropriate, eliminate toxic substances that disproportionately affect children, particularly developmental neurotoxins.⁵³⁴
377. Similarly, the Committee on Economic, Social and Cultural Rights has confirmed that environmental degradation disproportionately impacts children, requiring States to adopt child-sensitive and science-based environmental measures.⁵³⁵
378. These findings are reinforced by the UN Special Rapporteur on toxics, who has documented that environmental factors account for a substantial proportion of the global burden of disease, with children bearing a disproportionate share. Childhood exposure to toxic substances implicates the rights to life, health and bodily integrity.⁵³⁶
379. The UN Special Rapporteur has therefore reiterated that States must prioritise preventing exposure, particularly among children, and only resort to mitigation measures where prevention is not possible.⁵³⁷

4.3 Article 11(2) – information and education

380. The Charter also requires States Parties to take all necessary measures to inform and educate the public about risks arising from environmental and public health threats. This obligation includes the development of public awareness programmes aimed at ensuring individuals are adequately informed about health risks from pollution and the measures available to mitigate exposure and protect their health.⁵³⁸
381. Under Article 11(2) of the Charter, public health policies must aim at the highest attainable standard of health. National legal frameworks must therefore ensure access to health-related information and education, as well as opportunities for public participation in health-related decision-making.

sustainable environment: right to health in early childhood - right to survival and development); CRC General comment No. 19 (2016) Public budgeting for the realization of children's rights (art. 4).

⁵³¹ CRC CRC/C/GC/15 on health (2013), [para. 18] (footnotes omitted).

⁵³² CRC GC 26, paras. 24

⁵³³ CRC GC 26, para 65(g).

⁵³⁴ Right to a clean, healthy and sustainable environment – Report of the Special Rapporteur A/HRC/49/53.

⁵³⁵ CESCR GC27, paras. 78-79 (footnotes omitted).

⁵³⁶ Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, A/75/290, paras. 39 and 41. See also A/73/567: First report of the Special Rapporteur on toxics and human rights to the General Assembly.

⁵³⁷ A/HRC/33/41: Report on the rights of the child and hazardous substances and wastes

⁵³⁸ See, e.g., *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits, 6 December 2006, paras. 216-219.

382. This provision further implies that States must actively promote public health education, including targeted measures for groups facing specific vulnerabilities. Where relevant, this obligation extends to environmental health, requiring States to inform the public about environmental risks affecting health and to take preventive action against harmful exposures. It also entails the dissemination by States of reliable information at their disposal to counteract misinformation and to enable individuals to adopt protective behaviours in relation to health risks, including those arising from environmental contamination.⁵³⁹
383. These requirements are echoed both by the right of access to environmental information held by public authorities under Articles 4 and 5 of the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (hereinafter “the Aarhus Convention”).⁵⁴⁰ The European Union has put in place a comprehensive legal framework to ensure implementation of the rights contained in the Aarhus Convention.⁵⁴¹
384. In particular, under Article 5(1)(c) of the Aarhus Convention, the information that public authorities must release includes all information that could enable the public to prevent or mitigate harm arising from an imminent threat to the environment or human health. Information to enable the public to take preventive or mitigation measures can, inter alia, include safety recommendations, predictions about how the threat could develop, results of investigations and reporting on remedial and preventive actions taken.

Part V: Alleged Violations of Article 11 of the Charter

385. In the context of environmental pollution and health, the Committee has confirmed that Article 11 of the Charter requires States to:

- develop and regularly update sufficiently comprehensive environmental legislation and regulations;
- ensure that environmental standards and rules are properly applied, through appropriate supervisory machinery;
- assess health risks through epidemiological monitoring of the groups concerned, and inform and educate the public of these risks; and
- take precautionary measures, such as introducing threshold values for emissions and measuring environmental pollution at local level and to help to reduce it on a global scale.⁵⁴²

⁵³⁹ See, e.g., *Open Society European Policy Institute (OSEPI) v. Bulgaria*, Complaint No. 204/2022, decision on the merits, 3 December 2024, at para. 54.

⁵⁴⁰ Aarhus Convention [Text of the Convention | UNECE](#).

⁵⁴¹ [Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC; Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC; and Regulation \(EC\) No 1367/2006 of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies.](#)

⁵⁴² see *MHFR v Greece*, para 203

Since the entry into force of the Charter on 1 May 2004, Belgium has failed and continues to fail to fulfil these requirements and is therefore not in compliance with its obligations under paragraphs 1, 2 and 3 of Article 11 of the Charter.

5.1 Violation of Article 11(1) and (3) of the Charter

386. The Committee has confirmed that States' obligations under Article 11(1) and (3) of the Charter extend to the protection of the population from environmental conditions that pose a risk to health, including diffuse and cumulative pollution, and including circumstances where the full scale of harm may only become evident over time.⁵⁴³

5.1.1 Belgium's knowledge of PFAS-related risks

387. The Belgian authorities have long been aware of the risks associated with PFAS. This awareness includes general scientific knowledge of PFAS risks, and specific knowledge of contamination within Belgium, as well as its impacts on the population.

388. **General scientific knowledge:** Since the 1950s, when the first research into the health risks related to PFAS was conducted in the US, these risks have been widely publicised through high-profile PFAS scandals and developments such as the *Tennant v. DuPont* case, with the findings of the C8 Science Panel and subsequent investigations by the US EPA (see section 2.4.2 above).

389. Since 2000, the US EPA has raised concerns about PFAS, supported their phase-out, warned of their health risks and by 2003-2004 found them in all Americans tested (see section 2.4.2 above).

390. The Belgian government knew or ought to have known about these developments at the time the Charter came into force in respect of Belgium. The government would have been aware through its participation in international and EU regulatory procedures, such as the process leading up to inclusion of PFOS in the Stockholm Convention on Persistent Organic Pollutants in 2009 and the ongoing discussion regarding additional PFAS compounds. At EU level, PFOA was classified as toxic for reproduction and for specific organs as early as 2011, and two years later, it was added to the list of 'substances of very high concern' provided for by the EU's REACH Regulation (see Annex L).

391. **Specific knowledge of contamination and human exposure in Belgium:** As documented in the Flemish PFAS Inquiry findings, the authorities were aware of environmental and health risks associated with PFAS from the early 2000s (see reference in section 3.3.1). Internal documentation and exchanges between 3M and the Flemish authorities, collected by the inquiry commission (see section 3.3.1 and timeline in Annexes E and F), show the company's emissions and contamination were known to the authorities as early as 2000, and potentially before.

392. At the national level, early scientific findings include the 2003 and 2004 studies from the University of Antwerp, which identified the presence of PFAS in fish in Flemish rivers and the North Sea, as well as at a natural reserve close to the 3M site (see section 3.3.1. and the timeline in Annexes E and F).

⁵⁴³ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006; *International Federation for Human Rights (FIDH) v. Greece*, Complaint No. 72/2011, decision on the merits, 23 January 2013.

393. As early as 2002, the Belgian authorities' own biomonitoring studies (FLEHS) revealed elevated PFAS levels in people, particularly those living near the 3M plant in Zwijndrecht.
394. Multiple academic and government-funded studies between 2003 and 2017 – detailed in the timeline in Annexes E and F– confirmed alarming contamination levels. These studies demonstrate that the Belgian authorities, notably via Flemish governmental agencies, were aware not only of environmental contamination, but also of the direct exposure of the population to PFAS, particularly communities around PFAS hotspots.
395. In 2007, an academic study on bird eggs found some PFOS levels measured around 3M as the highest levels ever found in wildlife worldwide. From 2009–2012, the Belgian authorities commissioned a study of PFAS in food, which found significantly elevated levels of PFOS and other PFAS in locally sourced food, particularly eggs, vegetables and poultry. As to human exposure to PFAS, the study also included blood tests from a number of volunteers in the vicinity of 3M, with the results showing that 100% of participating volunteers had detectable PFAS levels; residents living closest to the site showed the highest concentrations (see section 3.3.1 above and timeline in Annexes E and F).
396. The Belgian authorities have been aware of PFAS contamination in soil, air, water and food, and about PFAS exposure in humans, at least in Flanders, for decades, if not longer. Documented evidence of early PFAS monitoring by 3M Belgium indicates that the company's PFAS contamination was known, measured, and raised at an official level 20 years ago (see section 3.3.1 above and timeline in Annexes E and F).
397. In Wallonia, in 2015, CHU Liège measured PFAS levels in the blood of volunteers from the Province of Liège, and found that PFOS and PFOA were the dominant compounds, with at least four PFAS detected in all participants, indicating widespread exposure.
398. Also in Wallonia, PFAS contamination of drinking water at a US military base in Chièvres was known to local and federal authorities as early as 2017. However, no public warnings were issued until after the RTBF's media investigation in 2023 (see section 3.3.2 above).
399. Taken together, these elements demonstrate that Belgium knew, or ought to have known, of the hazardous nature of PFAS, their presence in Belgium's environment and their risks to human health at least since the early 2000s. In these circumstances, Belgium was under an obligation to apply the precautionary principle by adopting measures at an early stage to stop PFAS emissions.

5.1.2 Belgium's failure to prevent and mitigate PFAS risks

400. Despite its prolonged awareness of the foreseeable threats to health, Belgium has failed to prevent and mitigate PFAS risks. The shortcomings of its response to the PFAS pollution include: fundamental deficiencies in its legal and policy framework; inadequate supervisory mechanisms; insufficient preventive and mitigative measures in practice; and lack of special protective measures for children in light of their heightened vulnerability to PFAS risks.

5.1.2.1 Belgium's current legal and policy framework is not capable of preventing PFAS risks

401. The fundamental structural deficiencies in the current PFAS regulatory and policy framework in Belgium include:

Lack of a comprehensive regulatory framework for the prevention of PFAS pollution at its source

402. There is no domestic legislation governing PFAS production, industrial or commercial use or waste treatment adequate to avoid new contamination or halt the ongoing accumulation of PFAS in the environment and therefore the population.
403. The current EU PFAS framework is insufficient, on its own, to ensure effective protection of the right to health under the Charter. This is because it does not comprehensively regulate PFAS as a group of toxic chemicals. Such comprehensive regulation would take the form of a wide restriction (except for essential uses without alternatives), or regulation of thresholds throughout the environment – the “class-based” regulation mentioned by the UN Special Rapporteur on toxics.
404. In terms of the feasibility of adopting a comprehensive framework to regulate PFAS, Belgium has the necessary legal tools to do so and is not precluded by its membership of the EU from taking proactive steps to regulate beyond the requirements of EU law or at a faster pace, as other EU Member States, notably France and Denmark, have.⁵⁴⁴
405. Indeed, there is an emerging consensus, in Europe and beyond, that the only effective way of dealing with PFAS is to restrict their production to essential uses for which there are no alternatives. This consensus follows updated scientific advice on the danger of PFAS and is evidenced by the proposal to restrict PFAS at EU level, supported by EU scientific committees (see Annex L with the information on the EU regulatory framework governing REACH). The consensus is reflected in the PFAS restrictions that have been introduced in various countries (see Annex P with more detailed information on the PFAS restrictions introduced in Europe and beyond).
406. Belgium’s legislative response to PFAS has, by contrast, failed to strike a balance between the general economic interests of the State and its obligations under the Charter to protect health.
407. Unlike other countries, Belgium has not considered the fact that practical, safer alternatives to the extensive use of PFAS are or could be made available, as illustrated by best practice examples from other countries (see Section IV and Annex P). The need to consider safer alternatives is especially pressing in Belgium. PFAS pollution levels across Belgium are higher than in other countries in Europe, which also means that the Belgian population is exposed to higher levels of PFAS than people in other European countries.

Existing thresholds and standards are inadequate to prevent PFAS risks

408. Existing instruments – such as emissions-control obligations under environmental permits and quality standards – have proven inadequate, as they neither prevent PFAS releases at source nor mitigate their impacts once contamination has occurred.
409. They do not establish binding PFAS thresholds in the environment adequate to protect health (see section 4.5.3 on the Belgian legal framework). Where thresholds exist, they are either non-binding or insufficiently stringent and largely reflect minimum EU requirements rather than science-based standards. This can be seen in the following environmental contexts:

⁵⁴⁴ See Annex P.

- 1) **Drinking water:** The three regional governments have now implemented the revised EU Drinking Water Directive, which mandates legally binding thresholds from January 2026. However, these thresholds are too loose to provide adequate protection for human health. By comparison, Denmark, Sweden and Italy have significantly tightened their PFAS rules for water standards, beyond those of the revised EU Drinking Water Directive (see para. 33 above). The U.S. EPA also sets much stricter limits for specific PFAS (see Dr DeWitt's report in Annex A).⁵⁴⁵ For TFA specifically, regional standards diverge sharply: Wallonia applies a drinking water guide value of 2.2 µg/L, following the Dutch authorities' recommendations, whereas Flanders continues to propose 15.6 µg/L, roughly seven times higher (see memorandum by Isabelle Larmuseau in Annex N).
- 2) **Environment:** There are currently no legally binding PFAS thresholds with respect to groundwater, surface water, soil or air. Thresholds, where they exist, are only voluntary guidance for permitting and monitoring activities. Authorities retain flexibility in how they respond to levels that exceed guidance values. This flexibility makes the current non-binding thresholds very difficult to enforce in practice.
- 3) **Food and consumer products:** There are currently no legally binding PFAS thresholds with respect to the majority of food products and the majority of consumer products.

Lack of adequate regulation of corporate activities

410. Belgium's legislative framework does not adequately regulate corporate activities to prevent PFAS pollution, nor does it impose sufficient obligations on companies to mitigate and remediate harm once it occurs.
411. The authorities of the three regions have, in many cases, continued to grant or renew permits for facilities known to be responsible for PFAS pollution. At the Brussels-Flanders border, authorisations for PFAS-emitting industrial installations were extended notwithstanding evidence of PFAS discharges into the Senne, a river. In Wallonia, key PFAS-using industries operate under repeatedly renewed permits that contain no PFAS-specific emission limits, effectively enabling ongoing toxic releases to continue. (see section 3.7.4 above)
412. In Flanders, permits for PFAS-affected soil works linked to the Oosterweel project were repeatedly re-issued following court suspensions, allowing operations to continue despite judicial findings of inadequate PFAS risk assessment (see section 3.7.4 above).
413. In practice, the Belgian authorities have relied primarily on permit-based controls and site-specific conditions, rather than adopting comprehensive binding standards governing PFAS emissions for use across sectors. As a result, PFAS pollution is often addressed only **after** contamination has been detected, rather than prevented at the source through stricter legislation.

Absence of effective strategies and action plans

⁵⁴⁵ U.S. EPA consistently lowered its health guidelines for PFOA and PFOS, from 400 ppt to 70 ppt and now to 4 ppt based on their cancer classification.

414. Compliance with Article 11 of the Charter requires coherent environmental and public health strategies addressing both prevention and mitigation. Belgium falls short of compliance with the Charter in the following respects:

- Brussels has no PFAS-specific action plan.
- Flanders and Wallonia have adopted plans, but these are focused on monitoring and managing contamination rather than preventing PFAS emissions at source.
- Neither of the regional plans includes a phase-out strategy for non-essential PFAS production and use.
- The Walloon PFAS strategy has no clear or detailed timeframes, which, alongside interim targets, would make it possible to measure progress in the reduction of PFAS pollution.⁵⁴⁶
- Under the Flemish PFAS action plan, progress is measured by actions taken and data collected, and not by achieving measurable interim targets within a detailed timeframe.

5.1.2.2 Inadequate supervision and enforcement of the legal and policy framework

415. The Committee has consistently held that States must ensure that legal frameworks are effectively applied and enforced in practice, including through inspections and sanctions that are adequate and dissuasive.⁵⁴⁷ Belgium has failed to meet these requirements.

Inspections

416. At critical moments, the Belgian authorities were aware of PFAS-related risks but failed to provide supervision of PFAS-emitting activities with due diligence and within a reasonable time. In Flanders, out of 1,917 installations falling within the scope of the EU Industrial Emissions Directive and potentially handling PFAS, only eight had been inspected for PFAS emissions by the end of 2024 (see section 3.7.4 above). Such limited oversight cannot be considered an effective system of supervision within the meaning of Article 11 of the Charter.

Sanctions

417. There is no evidence of meaningful sanctions being imposed on companies for PFAS-related health risks before 2020. Any sanctions since have been insufficient and hardly dissuasive. Even prolonged and serious environmental violations have led only to minimal fines. In 2019, for example, the Flemish government found 3M responsible for discharging PFOS-contaminated groundwater into the Schelde river. Despite knowing about this ongoing practice since 2006,⁵⁴⁸ the Flemish government imposed an administrative fine of only €7,200. Such minimal penalties are not proportionate sanctions for endangering public health and fail to enforce the polluter-pays principle recognised in EU and Belgian law. Ultimately, they cannot ensure compliance with the Charter.

⁵⁴⁶ see *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 204.

⁵⁴⁷ *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 203; *FIDH v Greece*, §150.

⁵⁴⁸ Rombouts, T., Schiltz, W.-F., & Schauvliege, M. (2022). Final Report of the PFAS-PFOS Parliamentary Inquiry Commission on the Management of PFOS-Contaminated Soils at the Oosterweel Site and Related Public Health Consequences ([Parl. Doc. No. 844 \(2021–2022\)](#) – No. 36). Flemish Parliament. Submitted on March 28, 2022 (in Dutch).

418. The Belgian courts have also confirmed that public authorities tolerated prolonged non-compliance and failed to enforce permit conditions, thereby allowing unlawful PFAS discharges to continue. In 2025, the Court of First Instance of East Flanders (Ghent) found textile company Utexbel and its managing director guilty of repeated environmental offences, including unlawful discharge of pollutants, breaches of permit conditions and violations of PFAS-related standards over several years.⁵⁴⁹ Despite recognising that these acts created serious risks to human health and caused environmental damage, the court imposed only financial penalties and did not order any suspension of operations or comprehensive remediation measures. This case illustrates that even where violations are established and confirmed in court, enforcement outcomes remain insufficient to effectively prevent ongoing harm to the environment and human health.
419. Likewise, civil judgments have provided symbolic compensation rather than effective remedies. A local family with elevated PFAS levels in their blood won a case against 3M, which resulted in only €500 compensation awarded per family member.

5.1.2.3 Failure to adopt sufficient precautionary measures

420. Beyond deficiencies in the legal framework and its enforcement, Belgium has failed to adopt practical, operational measures necessary to prevent health risks, including through environmental protection and the application of the precautionary principle as required by Article 11(3) of the Charter.⁵⁵⁰
421. These failures are multifold: failure to stop further PFAS emissions in practice; failure to provide bio- and eco-monitoring; failure to consider the susceptibility of children to PFAS risks and to consider their best interests; and failure to provide effective clean up and remediation.

Failure to stop further PFAS emissions

422. Belgium has failed to apply the precautionary principle to stop or radically decrease PFAS emissions, despite early scientific indications of PFAS risks to health. Instead it has continued to authorise activities contributing to PFAS emissions, escalating the contamination of the environment.
423. In particular, the Flemish authorities allowed the continued discharge of PFAS into air, water and soil – and thereby into human bodies – despite knowing that it was creating an unacceptable risk to health. More recently, the use of PFAS in pesticides has been increasing in Belgium (see section IV) despite the known risks to the health of farm workers, residents and consumers alike. According to the latest Belgian government market study on PFAS, Belgium ranks among the highest users of pesticides in Europe, with application levels exceeding 7 kg/ha (see para. 185 above). This trend is now reflected in environmental monitoring, with rising levels of TFA being detected in Belgian surface waters and drinking water.

Failure to provide comprehensive bio- and eco-monitoring of PFAS contamination

⁵⁴⁹ Court of First Instance of East-Flanders (Ghent division), Criminal Section, Judgment of 16 May 2026, case no. 2024/CF/1278 (Utexbel), [News | District Court of First Instance of East Flanders - Ghent Division](#).

⁵⁵⁰ see *Marangopoulos Foundation for Human Rights (MFHR) v. Greece*, Complaint No. 30/2005, decision on the merits of 6 December 2006, para. 204.

424. The Charter requires States to rely on up-to-date scientific knowledge and effective monitoring systems capable of informing preventive measures, which Belgium has failed to do.⁵⁵¹ While monitoring has identified contamination hotspots, it has not been implemented in a systematic, nationwide manner capable of informing policy or preventing exposure.
425. Only after 2002 did government-led or government-funded biomonitoring studies begin to include some PFAS monitoring. This was limited to Flanders, with the FLEHS Cycle I biomonitoring programme (2002–2006). Further and more systematic studies did not take place until prompted by the 3M scandal in 2021, the related media investigation and public outcry. These studies revealed the overwhelming majority of people, particularly those near hotspots such as the 3M factory site, had such high PFAS levels in their bodies, that harmful health effects cannot be ruled out.
426. Currently, two biomonitoring campaigns are ongoing in Flanders (FLEHS V) and Wallonia (ISSep), but no such studies have been undertaken in Brussels. These studies continue mapping exposure to PFAS, but they are not comprehensive at population level, and they are triggered by known contamination hotspots rather than designed as proactive, nationwide baseline monitoring.
427. In fact, there have been instances where the public authorities have advised against conducting such studies thereby directly hindering the scientific investigation of PFAS exposure and health risks. A letter from the Flemish Department of Health in June 2023 explicitly advised against regionally organised PFAS blood testing near contaminated sites, so some communities (e.g. in Ronse), continue to be refused testing (see para. 292 above).
428. Biomonitoring studies' coverage is uneven and does not systematically include all potentially at-risk groups, such as children, pregnant women, industrial workers, firefighters, military personnel and communities living near PFAS-processing plants, incineration sites, airports or historical fire-training areas.
429. In addition, biomonitoring results are not always clearly communicated, and their health consequences are not fully explained, nor integrated into medical, regulatory, or exposure-reduction measures. This significantly limits their ability to drive immediate preventive action and support affected people and the medical community (see also section para 490 below).
430. Indeed, biomonitoring results have not been used to drive timely effective prevention or mitigation of PFAS risks. For example, despite the fact that the Flemish biomonitoring programme detected PFAS in human blood as early as 2002, no policy measures were adopted to reduce exposure until after 2021 (see sections 3.3.1 and 3.3.2).
431. Additionally, **environmental monitoring** is geographically fragmented and essentially reactive, i.e., hotspot-driven, rather than preventive.
432. To sum up, Belgium has failed to establish comprehensive and effective monitoring systems. Biomonitoring and environmental monitoring are delayed, fragmented, reactive and uneven across regions.

Failure to ensure clean-up and remediation

⁵⁵¹ FIDH v Greece, para. 134.

433. Furthermore, Belgium has failed to ensure effective remediation of PFAS contamination to protect health.
434. In some regions, remediation efforts have been limited to short-term exposure reduction measures. In Wallonia and Brussels, no meaningful remediation or clean-up efforts have been undertaken, other than short term measures aimed to reduce exposure sources such as installing filters in contaminated water wells in some areas of Wallonia.
435. In the three regions, other remediation measures have been repeatedly postponed, in particular regarding residential gardens (see section 3.3.2 above). Across Belgium more generally, remediation often focuses on containment, and risk management (such as restricting use of contaminated groundwater or soil) rather than the restoration of affected environments.
436. Belgium has also failed to require consistent and effective remediation by those business entities which have caused or contributed to PFAS contamination.
437. In Flanders, the authorities have issued administrative remediation orders and soil remediation obligations, but these measures have been reactive, delayed and contested, with remediation timelines extending over decades due to technical complexity and legal disputes. In many instances, companies have been required to conduct further investigation and risk assessment rather than immediate full-scale remediation, leaving residents in a state of uncertainty and continuously exposed to contamination.
438. In several instances, companies have been allowed to continue operating under existing permits while remediation investigations are ongoing, meaning that remediation processes and pollution control run in parallel rather than remediation being a prerequisite for continued operation.
439. In some cases, the burden of PFAS contamination has even been shifted from one location to another – for example, from a production site to an incineration site. This approach not only fails to eliminate the pollutants, but also indirectly supports spreading emissions, thereby compounding the problem rather than solving it.
440. While the Flemish authorities secured an agreement with 3M which includes what appears to be a significant payment (€571 million), this amounts to only a small contribution to an increasingly costly clean-up. The cost of fully cleaning up Belgian territory is estimated to be between €2.5 billion and €40 billion over a 20-year period, depending on the ambition of the clean-up (see section 3.2 above and Annex I for more detailed information). Without a proper financing mechanism in place ensuring that polluters pay for the past, ongoing and future damage linked to their activities, it is likely that the PFAS costs will be borne by the general population.
441. The situation in Belgium stands in sharp contrast with the reaction of other governments to similar situations of PFAS contamination. For example, a number of US states have fined companies heavily over PFAS; the Netherlands halted Chemours' emissions; and in May 2026 Australia sued 3M for A\$2 billion (roughly €1.2 billion) over hidden risks and cleanup costs (see para. 235 above).

Inadequate public health measures

442. The inadequacy of Belgium's response is further reflected in the failure of its public health system to respond effectively to PFAS-related risks. Belgium's response to date has been limited to hard-to-implement advice for affected people.

443. The Belgian authorities have, in practice, shifted responsibility onto affected individuals, issuing consumption advisories (e.g. avoid home-grown produce, eggs or local groundwater) and promoting individual exposure-reduction measures (see section 3.3.2 above). As highlighted in the facts above, in the Brussels region, residents have to pay if they wish to have their soil tested; the same applies for biomonitoring. While such measures may be justified in the short-term, Belgium has effectively relied on them over the long term, normalising an approach that places a very heavy burden on individuals rather than addressing the underlying sources of contamination.
444. Such indefinite measures place the burden of managing contamination on residents who lack the technical, financial or practical capacity to remediate PFAS pollution themselves, effectively normalising long-term exposure mitigation as a substitute for effective public health measures and comprehensive clean-up. This impinges on people's dignity, as it locates the health risks in the behaviour of individuals, who are nearly powerless to act, while the State has failed to meet its obligation to provide effective health protection.
445. Moreover, Belgium has failed to provide for adequate options for the treatment of existing PFAS-related health effects and for the mitigation of the risk of future harms, including through measures to reduce current PFAS exposure in people's bodies.
446. Belgium has failed to ensure that its health system is capable of responding adequately to PFAS-related risks, including through timely and comprehensive biomonitoring, diagnostic testing and long-term medical surveillance. Nor have the results of the biomonitoring studies been embedded within a binding public health framework to prevent health impacts (see section 3.4.2 on key results from PFAS biomonitoring studies in Belgium and 3.4.3 on results of biomonitoring on children in Belgium above).
447. Belgium's failure is therefore not limited to regulation or enforcement, but extends to the practical functioning of its public health system, resulting in continued exposure and insufficient protection against PFAS-related health risks, thereby constituting an independent breach of Article 11 of the Charter.

5.1.2.4 Failure to take special protective measures in respect of children

448. Children are disproportionately affected by environmental degradation and long-term exposure to toxic substances, because their bodies are both smaller, and still developing. Exposing them to the same toxic PFAS burden as adults produces more serious and longer-lasting health harms (see section 2.4.3 on increased adverse effects on the health of children above).
449. This is why Belgium's specific legislative, administrative, budgetary and other measures to protect children against PFAS-related environmental hazards require separate consideration under Article 11 of the Charter.
450. As emphasised by the Committee on the Rights of the Child in its General Comment No. 26 (2023), States are required to take preventive, precautionary and evidence-based measures to protect children's health from environmental harm, including exposure to toxic substances, and to address both immediate and long-term impacts through effective regulation, monitoring, enforcement and, more generally, policy- and decision-making in the best interests of the child.
451. Belgium has not considered the long-term impacts of environmental PFAS pollution, as part of the development and implementation of PFAS-related legal and policy frameworks, health strategies, and action plans.

452. Neither of the two regional PFAS action plans establishes a child-specific framework nor integrates a systematic child-rights-based approach in their design or implementation. Children are not explicitly identified as a distinct group requiring tailored monitoring, disaggregated data collection, risk assessment, prevention, or remediation measures.
453. Nor do these plans reflect children's heightened physiological susceptibility to PFAS, their age-specific and behaviour-related exposure pathways (including through food, soil, water and breastfeeding), or the critical windows of vulnerability linked to prenatal, early childhood and adolescent development.
454. Biomonitoring with special focus on children and PFAS has been sporadic. Monitoring systems in Belgium lack child-specific indicators and do not provide true longitudinal data, i.e. through repeated observations of the same populations of children over long periods of time. These limitations hinder the ability of authorities to assess and respond to the cumulative, long-term and intergenerational impacts of PFAS exposure. This undermines both preventive and mitigative action and fails to ensure that children can grow and develop in conditions consistent with the highest attainable standard of health.
455. Moreover, despite the evidence of elevated PFAS concentrations in children's and adolescents' blood (see above section 3.4.3 on results of biomonitoring on children in Belgium), with observed associations affecting immune function, hormonal balance, growth and markers of pubertal development, authorities have in certain instances failed to ensure systematic and child-sensitive biomonitoring for affected populations, including in areas where schools and other child-centred environments are located.
456. Thus, in Wallonia, targeted biomonitoring campaigns conducted by ISSeP have measured PFAS concentrations in residents' blood, including children under 12, identifying levels exceeding those observed in the general Walloon population. However, these initiatives were not designed within a child-sensitive or vulnerability-focused framework, despite the presence of schools, childcare facilities and playgrounds in contaminated areas, and established scientific evidence of PFAS endocrine-disrupting effects on child development (see section 2.4.3 on increased adverse effects on the health of children above).
457. In Brussels, no biomonitoring has been undertaken, including in areas such as Uccle, despite the proximity of PFAS contamination sites (the former Sicli site) to child-centred environments such as schools, sports and other recreational facilities. After repeated refusals by authorities to carry out biomonitoring, the local NGO WeAreNature Brussels is assessing the feasibility of financing and running tests for the community. This reflects a significant gap in public preventive and precautionary child health measures.
458. Belgium has not undertaken, nor required PFAS-related industries to undertake, child-sensitive environmental and human rights impact assessments or due diligence processes, grounded in the best available science in relation to children's health and PFAS, guided by the best interests of the child, and attentive to long-term risk assessment and response.
459. Belgium has not taken specific measures to ensure protection of health during pregnancy in connection with PFAS, despite evidence that exposure during pregnancy can have long-term effects on children's health.
460. Taken together, the situation in Belgium demonstrates a systemic failure to implement coordinated, comprehensive and child-sensitive biomonitoring and other precautionary responses for PFAS exposure. Across all three regions, measures remain fragmented,

reactive and population-based, without adequately identifying or protecting children as a distinct group at heightened risk.

461. This structural gap limits Belgium's ability to prevent, detect and respond to the cumulative, long-term and intergenerational impacts of PFAS exposure on children, in line with their rights and best interests. This structural gap is particularly concerning in light of EU-level data indicating higher paediatric cancer incidence in Belgium compared to the EU average (see para. 316 above), reinforcing the need for coordinated, child-sensitive preventive measures under a precautionary approach.

5.1.3 Consequences of Belgium's failure to prevent and mitigate PFAS risks

462. As the evidence in Part III above shows, PFAS pollution in Belgium is increasingly threatening the environment and, thus, human health:

- 1) **The environment:** The water, soil, and, air across Belgium are contaminated with PFAS, with Belgium being described as "home to the highest levels of PFAS pollution".
- 2) **Human health:** People across Belgium have high levels of PFAS in their blood, which are often higher than levels recorded from samples collected from people in other countries, and carry increased risks of adverse health outcomes. As outlined in Part II, PFAS exposure has been associated with increased risks of serious health effects, including cancers, impacts on immune function, hormonal disruption and adverse developmental outcomes. In Belgium specifically, the well-documented rise in the occurrence of certain cancers, including paediatric cancers, has been linked to exposure to chemicals such as PFAS.

463. The environmental conditions in Belgium, as they relate to PFAS pollution, fall below what is required to ensure a healthy environment, thereby directly impairing the effective enjoyment of the right to health under Article 11 of the Charter. Such environmental conditions are incompatible with human dignity, as they expose individuals to harmful substances and undermine the basic conditions necessary for a dignified and healthy life. As illustrated by the testimonies of people affected by PFAS, there is widespread concern in Belgium about the health impacts of PFAS exposure, and significant uncertainty about whether the situation will worsen.

5.1.4 Conclusion – violation of Article 11(1) and (3) of the Charter

464. Taken together, the preceding sections show a systemic and long-standing failure by Belgium to comply with its obligations under Article 11(1) and (3) of the Charter.
465. Belgium has failed to adopt and maintain a legal and policy framework capable of preventing PFAS pollution at source and of ensuring adequate protection of human health. The weakness of existing instruments and the absence of comprehensive PFAS regulations have led to Belgium having the highest level of PFAS pollution in Europe.
466. Despite an emerging consensus in Europe that safer alternatives to PFAS exists, and that a total or near total ban of PFAS is the most effective way of preventing health risks, Belgium, unlike other European States, has failed to deliver the level of regulation necessary to prevent ongoing exposure at scale.

467. Instead, the Belgian authorities have approached the problem of PFAS pollution in a piecemeal, delayed and ineffective manner. They have failed to establish measurable targets, demonstrate consistent progress, or ensure a verifiable reduction in PFAS exposure among affected populations.
468. There has been scant enforcement of existing rules, inspections or dissuasive sanctions. To the contrary, Belgium has actively allowed PFAS risks to accelerate through continued authorisation of PFAS-emitting activities and inadequate control of industrial pollution.
469. Belgium has not acted with due diligence, within a reasonable timeframe, nor with the effective use of available resources. It has failed to implement timely and effective precautionary measures in practice, including comprehensive monitoring, remediation and public health responses.
470. Belgium financed biomonitoring programmes, but these were neither timely, nor implemented across the territory. Nor did Belgium act on the results of these biomonitoring studies, which repeatedly and clearly raised concerns regarding PFAS exposure levels.
471. The absence of a comprehensive remediation and clean-up strategy, with clear targets and timelines, demonstrates a failure to make the best possible use of available resources to address health risks.
472. Practical precautionary measures have often been aimed at containment, rather than at eliminating exposure at source. In many cases, remediation is preceded by prolonged investigation processes, while companies are allowed to continue operations.
473. At the same time, the State has relied extensively on individual behavioural measures to protect public health, rather than implementing collective, systemic solutions. Such behavioural measures place the burden of managing contamination on residents who lack the technical, financial or practical capacity to remediate PFAS pollution themselves. This locates the health risks in the conduct of individuals, who are nearly powerless to act, while it is the State that has not met its obligation to provide effective protection of health.
474. This failure to remediate ongoing contamination not only prevents the restoration of a healthy environment, but also perpetuates population exposure to environmental and health harm. The continued absence of effective remediation forces individuals to endure degraded living conditions, contrary to the requirements of human dignity.
475. The multiple shortcomings of Belgium's response, discussed above, are particularly acute for children, who are more susceptible to the long-term effects of PFAS exposure. The inadequacy of the public health response, and the reliance on general population measures, demonstrate the absence of targeted, child-sensitive protections.
476. With PFAS health risks so serious, Belgium has fundamentally failed to strike a balance between the economic interests of society and the health of vulnerable individuals, especially children, pregnant women and people living in PFAS hotspots.
477. Taken together, these failures reveal a structural failure to ensure the effective protection of the right to health and to a healthy environment, inherent in Article 11(1) and (3) of the Charter.

5.2 Violation of Article 11(2) of the Charter: PFAS and access to information

478. Article 11(2) of the Charter requires States Parties to ensure effective disease prevention through the provision of appropriate health education and information. This includes the proactive and timely dissemination of information on environmental health risks, transparent communication of hazards and the establishment of monitoring and alert systems capable of identifying risks early enough to allow individuals to protect themselves. An examination of the facts set out in Part IV demonstrates that the authorities failed to comply with these obligations in a consistent and sustained manner across all three regions over a prolonged period.
479. Belgium's non-compliance with the requirements of Article 11(2) of the Charter is first apparent in the extensive delays in informing the population about known PFAS-related health risks.
480. In Flanders, the authorities had access to significant information about PFOS contamination in the vicinity of the 3M site as early as the 2000s. Despite the clear public-health implications, residents were not informed of the pollution for nearly two decades. When new soil tests in 2017 linked to the Oosterweel project revealed an even more widespread PFOS contamination, OVAM again kept this information internal, concluding without any public consultation that there was no immediate health threat. Withholding of this crucial health information over a prolonged period prevented residents from taking even basic precautionary measures. It constitutes a manifest breach of Article 11(2) of the Charter, which obliges States to provide information proactively, particularly where exposure to hazardous substances is foreseeable.
481. Moreover, the quality and accuracy of information provided to residents in affected areas has been questioned. In Ronse, the reliability of government measurements of PFAS levels around the Serafijn school was publicly challenged by two internationally recognised PFAS experts, including Professor de Boer, raising concerns about the adequacy of official monitoring methodology.⁵⁵² More broadly, even where biomonitoring results revealed concerning levels of exposure, public meetings did not clearly convey the associated health risks or the necessary preventive actions. This lack of clarity, completeness and accessibility of information falls far short of the standards required under Article 11(2) of the Charter.
482. Moreover, critical findings were not publicised (including federal food contamination studies) or were actively downplayed, as seen in decisions not to communicate risks following significant soil and groundwater contamination discoveries in 2017. In 2008, the Belgian federal government commissioned a study of PFAS in food, for which samples were taken from several volunteers in the 3M vicinity. Blood analyses detected PFAS in all participating residents, with the highest concentrations found among those living closest to the site. These findings were not disclosed to the public until the 2021 Parliamentary inquiry (Annexes E and F).⁵⁵³ Similarly, in 2012, two significant studies, supported by the federal or Flemish governments (see timeline in Annex E), revealed that PFAS are present across the Belgian food chain, that dietary exposure is significant

⁵⁵² For example in Ronse, the reliability of government measures of PFAS levels at and around Serafijn school in Ronse was questioned by two internationally renowned PFAS experts, including Prof de Boer. <https://www.climaxi.be/nieuws/ronse-proffen-buizen-pfas-studie-vito-rond-schoolmetingen> (in Dutch).

⁵⁵³ There is no direct link to this study. The technical summary and data are referenced in the 2021 Rapid Opinion of the SciCom (FASFC): SciCom Advies 10-2021 (See Section 3.2.1, page 10).

- especially for children - and that Belgium needs stronger monitoring and risk-assessment systems for PFAS in food.
483. Even after receiving further evidence in 2022 showing widespread PFAS exposure in the population, the Walloon authorities withheld findings from local municipalities (see para. 253 above).
 484. Brussels also displays substantial shortcomings. While Bruxelles Environnement created a working group on emerging contaminants in 2019, public communication was limited and delayed, and was often framed in reassuring terms that did not reflect the full extent of the scientific uncertainties. Residents frequently received information only after contamination was already confirmed, and local associations have criticised the authorities for inconsistent messaging and late notifications. The reactive and fragmented nature of communication in Brussels undermines residents' ability to prevent exposure, contradicting the preventive purpose of Article 11(2) of the Charter.
 485. This gap in communication is further highlighted by guidance provided by health and medical experts directed at medical professionals themselves. The SSMG emphasises that general practitioners play a central role as a vector of information, including by interpreting PFAS biomonitoring results for patients. It also provides specific tools and training to enable physicians to respond to patient questions and to understand the health implications of PFAS exposure. This confirms that the system relies primarily on general practitioners as the first line of health communication. Where such professionals are not adequately informed about PFAS contamination and its health implications, there is a systemic risk that exposure-related conditions will remain undiagnosed or not linked to environmental causes. But there is nothing in place to ensure systematic training of GPs for this purpose. This has resulted in under-recognition of PFAS-related health impacts and weakens both individual access to appropriate care and the overall effectiveness of public health communication and surveillance systems.
 486. Belgium's failure to ensure access to timely and reliable information is further evidenced by the failure to put in place systematic biomonitoring and environmental monitoring in a timely manner.
 487. In Wallonia and Brussels, routine PFAS testing in drinking water began only in 2023, largely in response to EU obligations and media revelations rather than as part of a proactive public-health strategy. In Flanders, although large-scale biomonitoring has now been undertaken, it began only in 2021 despite government awareness of contamination dating back many years. Certain harmful PFAS compounds, notably TFA, remain excluded from environmental and biomonitoring campaigns, and even where TFA results exist, they are selectively communicated. OVAM's soil certificates for private properties have often failed to include information about known PFAS presence. These practices have deprived residents of essential information needed to prevent hazardous exposure, demonstrating a further breach of Belgium's obligations.
 488. Public-health guidance across Belgium has likewise been reactive rather than preventive.
 489. In Flanders, urgent dietary recommendations were issued only in 2021, decades after authorities first became aware of PFAS contamination. Wallonia warned residents against consuming home-grown eggs or produce only after media investigations and alarming biomonitoring results. Brussels adopted protection measures solely in response to confirmed contamination rather than as part of a preventive approach.

Article 11(2) of the Charter requires States to anticipate health risks and communicate them clearly and early; Belgium has instead acted only once health threats became publicly visible.

490. Moreover, the information provided to the public has not been consistently clear, reliable or scientifically sound, as required by the Charter. In Flanders, government communication on recent biomonitoring results was confusing and potentially misleading, as it suggested that PFOS levels were decreasing despite scientific validation studies indicating that the datasets were not comparable because of differences in procedures, approaches, and measurement methods (see para 242). Environmental inspection reports, which should be publicly accessible within four months, are often not made available on time, limiting public understanding of ongoing risks. In Wallonia, publicly available PFAS information is not only sparse but also includes scientifically questionable recommendations (see paras. 258–259). In Brussels, authorities have at times downplayed risks without offering comprehensive explanations, and residents' associations have criticised the administration for inconsistencies and insufficient transparency (see paras. 266–267).
491. The lack of data and understanding of the correlation between PFAS exposure and health impacts is an issue that yet remains to be addressed by the Belgian government.
492. In light of these facts, it is clear that Belgium has failed to fulfil its obligations under Article 11(2) of the Charter. By failing to communicate, delaying risk communication, providing incomplete or misleading guidance, failing to establish comprehensive monitoring systems and maintaining a fragmented and inconsistent regulatory landscape, Belgium has not ensured that individuals receive the education and information necessary to protect themselves from PFAS-related health risks. The failures identified are systemic, long-standing and continue to endanger the health of affected populations.

5.3 Conclusion and recommendations

493. The evidence presented in this complaint clearly shows that people in Belgium continue to be victims of widespread and systematic violations of their right to health, including their right to a healthy environment, due to the failure of the State to take adequate measures in relation to PFAS pollution. These violations have disproportionate impacts on children.
494. In Belgium, authorities knew of contamination for years, failed to inform residents, allowed emissions to continue, and only reacted after public scandal and parliamentary pressure, forcing affected communities to rely on inadequate judicial redress mechanisms rather than proactive state action.
495. For these reasons, ClientEarth respectfully requests that the Committee find Belgium in violation of Article 11(1), (2) and (3) of the Charter and submits that this situation will continue so long as Belgium fails to:
- 1) Prevent further contamination by enforcing strict industrial emission limits, risk management measures at sites and permitting requirements;
 - 2) Move expeditiously towards a restriction of PFAS as a family of chemicals except for essential uses without alternatives, and in the meantime adopt a class-based regulatory approach to PFAS;

- 3) Close existing gaps in exposure and health data collection, including the absence of systematic biomonitoring throughout the territory and insufficient monitoring in contaminated hotspots;
- 4) Prioritise targeted biomonitoring and health surveillance for children and pregnant women;
- 5) Provide health support to affected residents and integrate biomonitoring with public health surveillance systems to systematically track PFAS-related health outcomes; and
- 6) Ensure the clean-up and remediation of contaminated sites, including through the application of the polluter pays principle.

Part VI: Requests

496. This part sets out the Complainant's requests for immediate measures, priority examination, and a hearing.

6.1 Request for immediate measures

Legal basis for immediate measures

497. Rule 36(1) of the Rules of the European Committee of Social Rights provides that the Committee may indicate to States Parties any immediate measures it deems necessary to avoid irreparable injury or harm to the persons concerned at any stage of the proceedings. It has further emphasised that the purpose of the Charter is to ensure the effective protection of rights in practice and not merely in theory, and that any request for immediate measures must demonstrate a tangible situation in which individuals are exposed to a risk of serious and irreparable injury or harm.⁵⁵⁴

Growing risk of serious and irreparable harm

498. The Belgian government has acknowledged "the widespread presence of PFAS in the environment" and "also in human bodies" in all three regions of Belgium.⁵⁵⁵ The evidence presented in this complaint (see e.g. sections 3.3 and 3.4 above) clearly demonstrates that these harmful substances are highly persistent and bioaccumulative and remain in the human body for extended periods, making exposure effectively continuous, accelerating and, in practice, irreversible.

499. The risk of irreparable long-term harm is particularly acute for children. Scientific evidence establishes that PFAS exposure is associated with a range of severe adverse health effects, including childhood cancer, immune system disruption, endocrine disruption, neurodevelopmental harm and other long-term chronic conditions (see section 2.4.3 above). In light of scientific evidence, human biomonitoring data, the precautionary principle and the preventive obligations under Article 11 of the Charter, the Complainant submits that individuals in Belgium are exposed to a tangible and ever-increasing risk of serious and irreparable harm.

⁵⁵⁴ European Federation of National Organisations working with the Homeless (FEANTSA) v. the Netherlands, Complaint No. 86/2012, decision on immediate measures of 25 October 2013, para. 1.

⁵⁵⁵ BE submission's to the call by UN SR "PFAS and Human rights", see Annex H.

Immediate measures requested

500. Pursuant to Rule 36 (1) and (2), the Complainant respectfully requests that the Committee indicate the following immediate measures to Belgium to mitigate the current situation and prevent further exposure in the short term:

(A) Immediate measures to prevent further exposure to PFAS

- 1) urgently adopt coordinated measures to *restrict the use of contaminated soil and groundwater*;
- 2) immediately mandate *continuous monitoring of water, air, soil and food chains* to identify and halt PFAS pollution sources;
- 3) immediately accelerate the *clean-up and remediation of contaminated sites*, including, where necessary, temporary relocation measures, with priority given to homes, schools, playgrounds and agricultural land. All remediation efforts should be carried out in accordance with the polluter-pays principle.

(B) Immediate measures to protect children living with long-term exposure to PFAS

- 1) urgently establish *accessible information centres* so that children can obtain reliable and up-to-date information, and guarantee access to medical screening, health checks and appropriate follow-up treatment where necessary;
- 2) implement without delay *targeted and systematic biomonitoring programmes*, including blood testing of children, pregnant women, and especially populations living in proximity to known contamination sources; include monitoring of relevant exposure pathways such as mother-infant transmission, and provide clear and accessible explanations of biomonitoring results and associated health implications;
- 3) urgently ensure access to *uncontaminated drinking water* and, where necessary, facilitate or subsidise access to *safe and uncontaminated food*.

501. These immediate measures are practical, proportionate and in many cases already partially implemented, but require urgent scaling-up and consistent application. They are necessary to provide urgent protection to populations currently exposed to PFAS contamination and to ensure the effective realisation of the right to protection of health as guaranteed under the Charter.

Consequences if immediate measures are not granted

502. If immediate measures are not indicated, PFAS contamination will continue to accumulate in the environment and in human bodies, leading to further long-term exposure, increasing disease burden on the healthcare system in Belgium and irreversible health impacts for children. Given the persistence of these substances, future remediation efforts will not eliminate past exposure or its health consequences. Delay in action would therefore undermine the preventive function of Article 11 of the Charter and render future protection less effective and more costly.

6.2 Request for priority examination

503. Pursuant to Rule 26, the Complainant further requests that the Committee grant priority examination to this complaint in light of the following:

- 1) the gravity and urgency of the situation due to the systemic and widespread nature of PFAS contamination in Belgium, the seriousness of the risks to human health, the acute vulnerability of children and the cumulative and irreversible nature of exposure;
- 2) the novel questions this complaint raises concerning the effectiveness of the Charter in the face of a structural and endemic situation. PFAS contamination and its impact on the health of children is an important question of general interest which can have major health impacts in Belgium and beyond.

6.3 Request for a hearing

504. In accordance with Rule 33 (1), the Complainant respectfully requests that the Committee hold a hearing into this complaint. This request is made in light of the exceptional complexity, seriousness and systemic nature of the issues raised by the complaint, which concern widespread PFAS contamination in Belgium and its ongoing and potentially irreversible impacts on human health and the environment.

505. The case raises complex scientific, technical and legal questions relating to the interpretation and application of Article 11 of the Charter in the context of persistent chemical pollution, including the adequacy of preventive and precautionary measures, exposure assessment, biomonitoring data and the regulation of PFAS as a class of chemical. A hearing would enable the Committee to examine these issues in greater depth and to clarify factual and technical aspects that are central to the assessment of the complaint.

506. A hearing would further assist the Committee in understanding the scale and severity of PFAS contamination in Belgium, the cumulative nature of exposure and the specific risks faced by vulnerable groups, including children. It would also provide an opportunity to assess the adequacy of the State's regulatory and preventive framework in light of the obligations arising under Article 11 of the Charter.

507. In light of the foregoing, the Complainant respectfully requests that the Committee grant a hearing at the earliest appropriate stage of the proceedings.

Part VII: Final submissions

508. In light of the foregoing, the Complainant respectfully requests that the Committee:

- 1) declare the complaint admissible;
- 2) grant priority examination to the present complaint;
- 3) indicate the immediate measures set out above;
- 4) find that Belgium is in violation of Article 11(1), (2) and (3) of the Charter; and
- 5) recommend that Belgium adopt a class-based regulatory approach to PFAS and move expeditiously towards a restriction on PFAS as a group of chemicals, allowing only strictly defined essential uses without alternatives.

A handwritten signature in black ink, appearing to read 'LMC', with a stylized flourish at the end.

Laura Clarke
CEO, ClientEarth

Appendix I: List of annexes

Annexes

Annex	Description	Date
A	Expert report of Dr Jamie DeWitt: outlining the regulatory history of PFAS; an overview of PFAS and toxicological research; state of the science on adverse health effects of PFAS; biomonitoring and environmental monitoring in Belgium; potential health risks to Belgian residents; and evolving health-based values for PFAS.	08.08.2025
B	Expert report of Dr Philippe Grandjean: outlining early knowledge of PFAS properties; background on PFAS and environmental contamination; current knowledge on adverse health effects; regulatory responses to PFAS toxicity; and specific conclusions on PFAS in Belgium.	04.09.2025
C	Expert opinion of Prof. dr. Jacob de Boer: outlining the results of analysis of random blood samples from residents in Belgium, not living close to a PFAS source, confirming exposure to PFAS for all people in Belgium.	08.01.2026
D	WHO Veneto PFAS report: providing comprehensive epidemiological and public health assessment of PFAS contamination in the Veneto region (Italy), including exposure pathways, biomonitoring data and documented health outcomes in affected populations.	01.10.2017
E	Timeline of the PFAS-related events established by Flemish Parliamentary Inquiry Commission (in Dutch with an unofficial translation in English) together with the timeline prepared by ClientEarth	
F	Timeline of the PFAS-related events established by ClientEarth	
G	List of sites in Belgium associated with PFAS findings	
H	Belgian submission to the UN Special Rapporteur on toxics: outlining Belgium's situation regarding PFAS, including regulatory context, scientific evidence on health impacts, biomonitoring data, population exposure and human rights implications.	06.01.2026
I	PFAS Financing Mechanism Report (Belgium, 2026): analysing in detail financial implications of PFAS contamination in Belgium, including cost estimates for remediation, healthcare impacts, liability considerations and proposed funding mechanisms at the federal level.	01.2026

Annex	Description	Date
	Mécanisme de financement - pollution aux PFAS - rapport 2026 SPF Santé publique	
J	Biomonitoring studies in Flanders and Wallonia: detailing specific studies referenced in Part III.	
K	International PFAS framework: summarising international legal and policy instruments addressing PFAS, including the Stockholm Convention.	
L	EU PFAS framework summary: summarising the European Union regulatory framework governing PFAS, including REACH restrictions, drinking water standards and industrial emissions controls	
M	Law4Nature memo on the legal framework in Wallonia and Brussels, Belgium relevant to PFAS: outlining the framework for PFAS in drinking water, groundwater, soil (materials), air, food, blood; framework on measuring and monitoring PFAS; framework on access to environmental information; framework on remedies for health threats; relevant national cases; permitting procedures	
N	Larmuseau memo on the legal framework in Flanders, Belgium relevant to PFAS: outlining the framework for PFAS in drinking water, groundwater, soil (materials), air, food, blood; framework on measuring and monitoring PFAS; framework on access to environmental information; framework on remedies for health threats; relevant national cases; permitting procedures	
O	Expert opinion of Mr Tangu Vandenput: outlining the legal possibility, or even the obligation, to prohibit or restrict the use of PFAS in Belgium	08.10.2025
P	List of examples of PFAS sectorial restrictions: compiling existing or proposed PFAS restrictions across key sectors (e.g., food contact materials, textiles, firefighting foams, cosmetics).	
R	List of comparative European PFAS jurisprudence: summarising relevant court decisions and litigation across European jurisdictions concerning PFAS contamination, liability, regulatory enforcement and protection of public health and the environment.	
S	Witness testimonies from members of the public in Belgium: collected between 2025 and 2026 through a combination of direct interviews and written submissions. Contributors were identified via local advocacy networks and outreach in PFAS-affected areas. Each testimony is attributed to the region where the exposure or impact occurred.	

Annex	Description	Date
a	Hedwig Rooman – resident of Zwijndrecht (Flanders)	06.2025
b	Toon Penen – resident of Zwijndrecht (Flanders)	22.06.2026
c	Jean-Baptiste Godinot – resident of Uccle (Brussels)	25.06.2026
d	Parent of child exposed to PFAS (Wallonia)	
e	Laurie Paziienza – resident of Nandrin (Wallonia)	22.08.2025