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PUBLIC CONSULTATION ON THE RESTRICTION ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF PFAS.

Arnika welcomes the uPFAS restriction proposal, which has high ambition to stop the PFAS pollution from majority of sources. We applaud the dossier submitters to include the entire class of chemicals based on the persistence and include fluoropolymers as well as F-gases in the scope of this restrictions.

There is clear and unequivocal evidence that demonstrates global contamination of the environment, wildlife and human populations by PFAS - the most persistent human-made chemicals known to date. PFAS pose an unacceptable risk for both current and future generations due to their extreme persistence, and the scientific evidence that links exposure to harmful impacts on wildlife and human health.

Widespread PFAS-use has created an irreversible toxic legacy of global contamination. It is therefore vital for the EU to adopt an effective PFAS regulation to become an example for similar restrictions at the UN level (via Stockholm Convention) and in other world regions.

Due to their high persistence and extensive use, PFAS have become a global issue of concern. Scientists have warned against poorly reversible exposures and the overall underestimation of the risks associated with their widespread uses.[1] For the European Economic Area (EEA) alone, the annual health-related costs associated with PFAS exposure are estimated to EUR 52-84 billion. [2]

We also applaud the dossier submitters to base the restriction on persistence. As the leading scientist on PFAS prof. Martin Scheringer points out: "Persistence has been seen as a property that merely indicates the presence of a chemical in a given environment. It may seem that persistent chemicals are inert and thus relatively benign. However, they still have many ways to interfere with an organism's physiology and cause adverse effects. Therefore, persistence is a property that makes the toxicity of any chemical much worse because it leads to—as long as uses and corresponding emissions are ongoing—ever-increasing concentrations, and toxic effects will manifest at some point. In other words, persistence acts as a multiplier of toxicity."[3]

[1] Ritscher, A., et al. 2018. *Zurich Statement on Future Actions on Per- and Polyfluoroalkyl Substances (PFASs).* Environmental Health Perspectives. **126**(8): p. 084502.
[2] Goldenman, G., et al. 2019. *The cost of inaction. A socioeconomic analysis of environmental and health impacts linked to exposure to PFAS*, in *TemaNord 2019:516*. 2019, Nordic Council of Ministers. p. 194.
[3] Scheringer, M. 2023. *Innovate beyond PFAS* .Science. 381,251-251(2023).DOI:10.1126/science.adj7475

PFAS in products creates a barrier to the circular economy and a waste problem, yet to be solved.

Arnika studies have shown that PFAS are found in residual concentrations in food packaging items, even in samples which were NOT intentionally treated with PFAS. This demonstrates the pervasive contamination of the paper and board food packaging production chain.

However, paper and board food packaging without food residue might end up being recycled and thus contributing to the contamination of the recycling chain.[4]

The PFAS impurities identified in recycled paper items investigated in our studies are most likely to come from PFAS-treated source material.[5] Recycling of PFAS-treated paper leads to further contamination of new products, including with legacy PFAS which may find their way into marketed products despite their restricted use. The recycling of PFAS-treated food packaging leads not only to exposure of consumers, but also of workers and communities living nearby recycling plants. Workers can be exposed to PFAS when source paper is shredded and grinded, and surrounding communities are exposed when PFAS are emitted into the water.[6],[7]

PFAS-free alternatives on the market for the paper and compostable natural fibre materials for food packaging

Our survey of food packaging sold on the EU market showed that paper and board packaging for takeaway food can be produced without PFAS treatment; highlighting that the use of PFAS is not needed for these products. Our oil bead test results and the TOF values showed that several samples had not been previously treated for oil repellency. These included paper bags for french fries and hamburgers or cardboard boxes for bakery products and pizza.[8]

In particular, our study identified a significant shift in the production of cardboard boxes for pizza. Contrary to previous studies none of the pizza boxes purchased in the United Kingdom, the Netherlands and Germany were treated with PFAS. It is likely that the simple mechanical solution to achieve an extra-dense paper that inhibits leakage of fat through the paper is now used by pizza cardboard producers, as an alternative to PFAS treatment.[9] In addition, vegetable parchment or application of starch has been reported as cost-effective alternatives to PFAS treatment of disposable paper and board food packaging.[10],[11],[12] From an environmental perspective, durable and reusable

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[4] OECD. 2020. *PFASs and Alternatives in Food Packaging (Paper and Paperboard) Report on the Commercial Availability and Current Uses*, in OECD Series on Risk Management. OECD, Environment,Health and Safety,Environment Directorate. p. 67.
[5] Curtzwiler, G.W., et al. 2021. *Significance of Perfluoroalkyl Substances (PFAS) in Food Packaging*. Integr Environ Assess Manag, 2021. 17(1): p. 7-12.
[6] Kim, J.W., et al. 2023. *Contamination by perfluorinated compounds in water near waste recycling and disposal sites in Vietnam*. Environ Monit Assess, 2013. 185(4): p. 2909-19.
[7] Zhang, T., et al. 2019. *Health Status of Elderly People Living Near E-Waste Recycling Sites: Association of E-Waste Dismantling Activities with Legacy Perfluoroalkyl Substances (PFASs)*. Environmental Science & Technology Letters, 2019. 6(3): p. 133-140.
[8] Ibid, Straková J., et al. 2022.
[9] POPRC*, Guidance on alternatives to perfluorooctane sulfonate and its derivatives, in Report of the Persistent Organic Pollutants Review Committee on the work of its sixth meeting*. 2010.
[10] Trier, X., et al. 2017. *PFAS in paper and board for food contact - options for risk management of poly- and perfluorinated substances*. Copenhagen, Denmark. p. 110.
[11] *Per- and Polyfluoroalkyl Substances in Food Packaging Alternatives Assessment, in Hazardous Waste and Toxics Reduction Program.* 2021. Washington State Department of Ecology: Olympia, Washington. p. 2018.
[12] OECD. 2020. *PFASs and Alternatives in Food Packaging (Paper and Paperboard) Report on the Commercial Availability and Current Uses*, in OECD Series on Risk Management. 2020, OECD, Environment,Health and Safety,Environment Directorate. p. 67.

materials are always the favoured option for food packaging and tableware, such as for instance glass jars or ceramic plates.

Some of the major fast-food chains have already announced that they are abandoning PFAS use in disposable food packaging and tableware due to environmental and health concerns and the availability of viable alternatives. In December 2020, the major online retailer Amazon restricted intentional use of PFAS to all of Amazon's kitchen brand food contact materials in the EU and the U.S. Later in January 2021, McDonald's committed to phase out PFAS globally from its customer packaging by 2025.

PFAS Incineration

PFAS are almost impossible to destroy, even high temperature thermal treatment does not guarantee their full break down.[13] To really get rid of PFAS, incineration at 1400 ºC is required. At lower temperatures, PFAS degrade to shorter PFAS and eventually end up as extremely persistent ultra-short PFAS, of which some have high global warming potential. Municipal waste incinerators contribute to the increasing environmental pollution with PFAS. To minimize the emission, PFAS containing products and materials should be handled with great caution. EC, ECHA and member states shall consider treating all PFAS waste like POPs-containing waste as dealt with under the EU POPs Regulation.

Facilities manufacturing e.g. PFAS-treated paper emit PFAS into the air and wastewater and pollute the surrounding environment.[14],[15],[16] Most of the types of fast-food packaging investigated in our studies are likely to end up in landfills or be incinerated, since the food residues prevent them from being recycled. Disposal of PFAS-treated food contact materials in municipal incinerators leads to emissions of PFAS, fluorinated greenhouse gases and other products of incomplete combustion to the surrounding environment.[17],[18],[19] Some PFAS remain in the after-incineration fly ash,[20] and then contribute to the further environmental exposures when the fly ash is landfilled or used in construction materials.[21]

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[13] EPA. 2020. *Interim Guidance on Destroying and Disposing of Certain PFAS and PFAS-Containing Materials That Are Not Consumer Products.* https://www.epa.gov/pfas/interim-guidance-destroying-and-disposing-certain-pfas-and-pfas-containing-materials-are-not

[14] Clara, M. et al. 2008. *Emissions of perfluorinated alkylated substances (PFAS) from point sources--identification of relevant branches*. Water Sci Technol, 2008. 58(1): p. 59-66.

[15] Langberg, H.A. et al. 2020. *Paper product production identified as the main source of per- and polyfluoroalkyl substances (PFAS) in a Norwegian lake: Source and historic emission tracking*. Environ Pollut, 2020. 273: p. 116259.

[16] Schroeder, T. et al. 2021. *PFAS soil and groundwater contamination via industrial airborne emission and land deposition in SW Vermont and Eastern New York State, USA*. Environmental Science: Processes & Impacts, 2021. 23(2): p. 291-301.

[17] Huber, S. et al. 2009. *Emissions from incineration of fluoropolymer materials - A literature survey*.

[18] Arkenbout, A. 2018. *Long-term sampling emission of PFOS and PFOA of a Waste-to-Energy incinerator*.

[19] Mühle, J. et al. *Perfluorocyclobutane (PFC-318) in the global atmosphere*. Atmospheric Chemistry and Physics, 2019. 19(15): p. 10335-10359.

[20] Wohlin, D. 2020.*Analysis of PFAS in ash from incineration facilities from Sweden*, in Bachelor thesis in chemistry, 30HP. 2020, Örevro University, Sweden.

[21] Petrlik, J., et al. 2017. *Toxic Ash Poisons Our Food Chain*. 2017. p. 108.

Only specialised non-combustion technologies seem to offer some hope in fully destroying them.[22],[23],[24] The disposal of PFAS-treated products in municipal incinerators leads to the emission of products of incomplete combustion, including PFAS and long-lived, potent greenhouse gases.[25] Some PFAS also remain in the ash residues, generating further waste contaminated with PFAS.[26] Some studies also demonstrate the release of fluorinated greenhouse gases from incineration. Discarding PFAS-treated consumer products with general household waste, whether to landfill or incineration, ultimately acts as a source of emissions to the environment.[27]

Because of the PFAS emission from incineration and the very complicated ways and yet to be developed and widely implemented technologies for PFAS destruction, it is vital to adopt as wide universal PFAS restriction proposal, which covers the entire class of PFAS, fluoropolymers and F-gases.

Fluoropolymers must be included into the scope of the restriction as their presence in articles causes the release of their perfluorinated precursors

Polymeric PFAS (fluoropolymers, side-chain fluorinated polymers, and all other polymers fulfilling the PFAS-definition should be within the scope of the restriction because they will decompose into shorter PFAS with time, and eventually end up as more bioavailable and toxic PFAS.[28] Side-chain fluorinated polymers are also well known to release their perfluorinated side chains.

In a number of studies, Arnika demonstrated the presence of break-down products of fluoropolymers:

While analysing fast food packaging, popcorn paper bags, outdoor textiles in the Czech University labs, Arnika has found fluorotelomer alcohols as primary contaminants released from the products. [29], [30],[31] Fluorotelomer alcohols are starting chemicals and intermediate degradation by-products in production of the majority of commercial PFAS, including fluorotelomer-based polymers. FTOHs have been shown to be released from products and there are multiple toxicological concerns regarding FTOHs

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[22] Krause, M.J. et al. 2022. *Supercritical water oxidation as an innovative technology for PFAS destruction*. Journal of Environmental Engineering, 148(2), p.05021006. https://ascelibrary.org/doi/10.1061/%28ASCE%29EE.1943-7870.0001957

[23] IPEN, 2021. *Non-Combustion Technology for POPs waste destruction. Replacing incineration with clean technology.* https://ipen.org/documents/non-combustion-technology-pops-waste-destruction

[24] Trang, B. et al., 2022. *Low-temperature mineralization of perfluorocarboxylic acids*. Science, 377(6608), pp.839-845. https://doi.org/10.1126/science.abm8868

[25] Huber, S. et al., 2009. *Emissions from incineration of fluoropolymer materials*. A literature survey. NILU OR. https://hdl.handle.net/11250/2718679

[26] Wohlin, D., 2020. *Analysis of PFAS in ash from incineration facilities from Sweden*. https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1473805&dswid=-8344

[27] Stoiber, T. et al., 2020*. Disposal of products and materials containing per-and polyfluoroalkyl substances (PFAS): A cyclical problem.* Chemosphere, 260, p.127659. https://doi.org/10.1016/j.chemosphere.2020.127659

[28] Wang, Z. et al. 2021. *A new OECD definition for per and polyfluoroalkyl substances*. Environmental science & technology, 55(23), 15575 15578.

[29] Straková, J. et al. 2022. *PFAS in Clothing: Study In Indonesia, China, And Russia Shows Barriers For Non-Toxic Circular Economy.* https://ipen.org/documents/pfas-clothing-study-indonesia-china-and-russia-shows-barriers-non-toxic-circular-economy

[30] Straková, J. et al. 2021. *Throwaway Packaging, Forever Chemicals: European wide survey of PFAS in disposable food packaging and tableware.* https://arnika.org/en/publications/throwaway-packaging-forever-chemicals-european-wide-survey-of-pfas-in-disposable-food-packaging-and-tableware

[31] Strakova J. 2022. *Czech children's jackets contain forever chemicals.* Arnika. Press release accessed on 20 September, 2023. https://arnika.org/en/news/children-s-jackets-on-the-czech-market-contain-forever-chemicals

themselves and their degradation products. Both are associated with hepatotoxicity, mammary gland cancer, negative impacts on the reproductive system, and with developmental disorders.

Arnika studies indicate that water repellence of the analysed synthetic outdoor- and sportswear was achieved by the application of side chain fluorotelomer-based polymers. The most-frequently identified fluorotelomer alcohol 8:2 FTOH can degrade to the highly persistent pefluorocarboxylic acid PFOA that is listed for global elimination under the Stockholm Convention.

Specifically, during wearing and aging of water repellent clothes, 8:2 FTOH degrades to perfluorocarboxylic acids (PFCAs; including the globally banned perfluorooctanoate (PFOA). In the long run, FTOHs present in waste may also degrade into PFCAs and pollute the environment.[32],[33]

In a different (yet unpublished) study, total extractable fluorine content was analyzed in outdoor textile samples. In one sample of a children jacket treated with Teflon Ecolite coating, there were no individual PFAS found while total extractable fluorine content was the highest among all the samples of clothing bought in the EU. This shows that individual PFAS analysis is not sufficient methodology to indicate the presence of PFAS. See attached Annex 1 for specific concentrations.

Laboratory methods

Arnika had various consumer product samples analyzed for the presence of individual PFAS substances. In a few studies, we additionally compared the individual PFAS contamination with the total organic fluorine content. We recommend using the methodology of Total organic/extractable fluorine content for determining the PFAS content in consumer products as they better illustrate the width of PFAS contamination.

Total Organic Fluorine (TOF)

The TOF method was originally developed for Danish authorities to test compliance with their legal ban of PFAS in paper/board food contact materials and is considered as an accepted proxy for total PFAS content.

The accredited lab analysis of food contact paper packaging was performed by Eurofins Product Testing in Denmark using the accredited and validated method DIN 51723.

Fluorinated substances are degraded in a combustion process into hydrogen fluoride, which is quantitatively collected in an impinge with a buffer solution. The amount of collected hydrogen fluoride is determined by ion chromatography. The expanded uncertainty of the method is 30% and the detection limit is 0.33 mg/kg dry weight (dw). The TOF results can be compared with the Danish guided indicator value of 20 mg/kg dw TOF that was established as a means of differentiating between intentionally added PFAS and background levels of PFAS in paper/board food contact materials.

In our survey into single-use paper and compostable food packaging and tableware, the total organic fluorine (TOF) test provided an indication of total PFAS content in the samples and helped identify

[32] Washington, J.W., et al. 2015. *Decades-Scale Degradation of Commercial, Side-Chain, Fluorotelomer-Based Polymers in Soils and Water.* Environmental Science & Technology. 49(2): p. 915-923.
[33] Li, L., et al. 2017. *Degradation of fluorotelomer-based polymers contributes to the global occurrence of fluorotelomer alcohol and perfluoroalkyl carboxylates: a combined dynamic substance flow and environmental fate modeling analysis.* Environmental science & technology. 51(8): p. 4461-4470.

the most heavily PFAS-treated group of samples - compostables made of sugarcane and wheat moulded fibre, followed by takeaway packaging for fatty foods. Gas/liquid chromatography and mass spectrometry provided quantification of specific PFAS present in the samples and specific profiles of the most frequently identified PFAS - 6:2 FTOH. However, based on the mass balance calculations, only 1% of the organic fluorine present in our samples has been identified by targeted, compound-specific analysis of 55 PFAS. It might be relevant to include the method of the total oxidisable precursors (TOP assay) in future research on PFAS in food contact materials, because that analytical technique helps to identify additional PFAS such as the ones built in to the structure of fluorinated polymers.

In our next rounds of testing of food contact papers, the sample extraction methods were used to extract organic fluorine and remove inorganic fluorine prior to analysis. The organofluorine content remaining after extraction, i.e., total extractable organofluorine (TEOF) content, was used as an approximation of the PFAS contamination. With this approach, calculation of mass balance better represents the proportion of the organic fluorine presented in our samples identified by targeted, compound-specific analysis of individual PFAS.

The TOF results were compared with the Danish guided indicator value of 20 mg/kg dw TOF that was established as a means of differentiating between intentionally added PFAS and background levels of PFAS in paper/board food contact materials.

Targeted PFAS analysis

Targeted analysis applied in Arnika studies covered 55 specific PFAS substances and was performed at the Department of Food Analysis and Nutrition of the University of Chemistry and Technology in Prague, Czech Republic. The analysed substances were selected based on the availability of standards and PFAS reported in food contact materials in previous studies.

The analysis of the 55 specific PFAS involved extraction with a methanol: ethyl-acetate mixture and was carried out using ultra-high-performance liquid chromatography interfaced with tandem mass spectrometry with electrospray ionization in negative mode (UHPLC-ESI-MS/MS) for all PFAS except FTOHs. The selected FTOHs were analysed using gas chromatography coupled with tandem mass spectrometry operated in positive ion chemical ionization (GC-PICI-MS/MS).

The fluorine mass balance was calculated according to the method described in Schultes et al. (2019).[34] *It involved converting the concentrations of the specified PFAS identified in a given sample into their fluorine equivalent and then comparing the sum of the identified fluorine with the total organic fluorine amount measured in a given sample.*

The fluorine mass balance calculation is used to identify how much of the total organic fluorine is accounted for by the specific PFAS in a given sample. These calculations revealed that fluorine from the targeted PFAS identified in the samples represents only between 0.01 to 3.4% of the total organic fluorine detected. The average concentrations of specific PFAS in paper and compostable food packaging was 0.15% for the PFAS-treated oil-beading compostables, 0.041% for the PFAS-treated oil-beading takeaway papers and 0.92% for the non PFAS-treated oil-spreading or soaking

[34] Schultes, L., et al. 2019.*Total Fluorine Measurements in Food Packaging: How Do Current Methods Perform?* Environmental Science & Technology Letters, 2019. 6(2): p. 73-78.

papers/boards. Only 1% of the organic fluorine present in our samples could be ascribed to specific PFAS chemicals identified with targeted, compound-specific analysis of 55 PFAS.[35]

Similar issue was encountered in another Arnika study of PFAS in textile samples: The limited number of identifiable PFAS in the textile samples highlighted both the current limitations of the employed analytical methods, which are not able to identify PFAS such as fluorinated polymers, and the lack of commercially available standards to allow identification and quantification of all relevant PFAS used for treating textiles. In this regard, the generally identified PFAS are only the tip of the iceberg. Despite not being identified individually, the other potentially present PFAS cause concern due to their ability to persist and accumulate in the environment. It is not only challenging to identify them, but also to control and remove them once they are in the environment.[36]

PFAS pollution is a threat to our health and drinking water.

Human biomonitoring studies provide clear evidence that PFAS are also accumulating in the blood serum of populations worldwide, with exposure linked to occupational risk and age cohort.[37] Intake in children is almost double than that of adults. Babies are born with PFAS already in their bodies from prenatal exposure, are fed PFAS-contaminated breast-milk or formula[38],[39] and ingest significant quantities of PFAS in contaminated house-dust.

Studies from the Czech Republic are showing that PFAS are polluting our drinking water, and are even contaminating our ground water sources. As PFAS bioaccumulate in the food chain, studies have shown PFAS accumulation in fish in Czech rivers, while demonstrating significant increase from the river beginning down the stream as the concentrations of PFAS increase when water goes through large municipalities and industrial sources of PFAS pollution.[40]

Additionally, PFAS are polluting our fields and soil as there is still the practice of using wastewater sludge as fertilizer material in the Czechia, while PFAS are accumulating in waste water plants and are released via waste water sludge thus creating risk of food contamination too.[41]

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[35] Straková, J. et al. 2021. *Throwaway Packaging, Forever Chemicals: European wide survey of PFAS in disposable food packaging and tableware*. https://arnika.org/en/publications/throwaway-packaging-forever-chemicals-european-wide-survey-of-pfas-in-disposable-food-packaging-and-tableware

[36] Straková, J. et al. 2022. *PFAS in Clothing: Study In Indonesia, China, And Russia Shows Barriers For Non-Toxic Circular Economy.* https://ipen.org/documents/pfas-clothing-study-indonesia-china-and-russia-shows-barriers-non-toxic-circular-economy

[37] EFSA Panel on Contaminants in the Food Chain (EFSA CONTAM Panel). 2020. *Risk to human health related to the presence of perfluoroalkyl substances in food*. EFSA Journal, 18(9), p.e06223. https://doi.org/10.2903/j.efsa.2020.6223

[38] Ibid. EFSA. 2020.

[39] Lozenzo, M. et al., 2016. *Perfluoroalkyl substances in break milk, infant formula and baby food Valencian community (Spain).* Environmental Nanotechnology, Monitoring & Management, 6, pp. 108-115. https://doi.org/10.1016/j.enmm.2016.09.001

[40] Semerád, J. et al. 2022. *The driving factors of per-and polyfluorinated alkyl substance (PFAS) accumulation in selected fish species: The influence of position in river continuum, fish feed composition, and pollutant properties.* Science of The Total Environment, 2022, 816: 151662

[41] Semerád, J. et al. 2020. *Screening for 32 per-and polyfluoroalkyl substances (PFAS) including GenX in sludges from 43 WWTPs located in the Czech Republic-Evaluation of potential accumulation in vegetables after application of biosolids.* Chemosphere, 2020, 261: 128018.

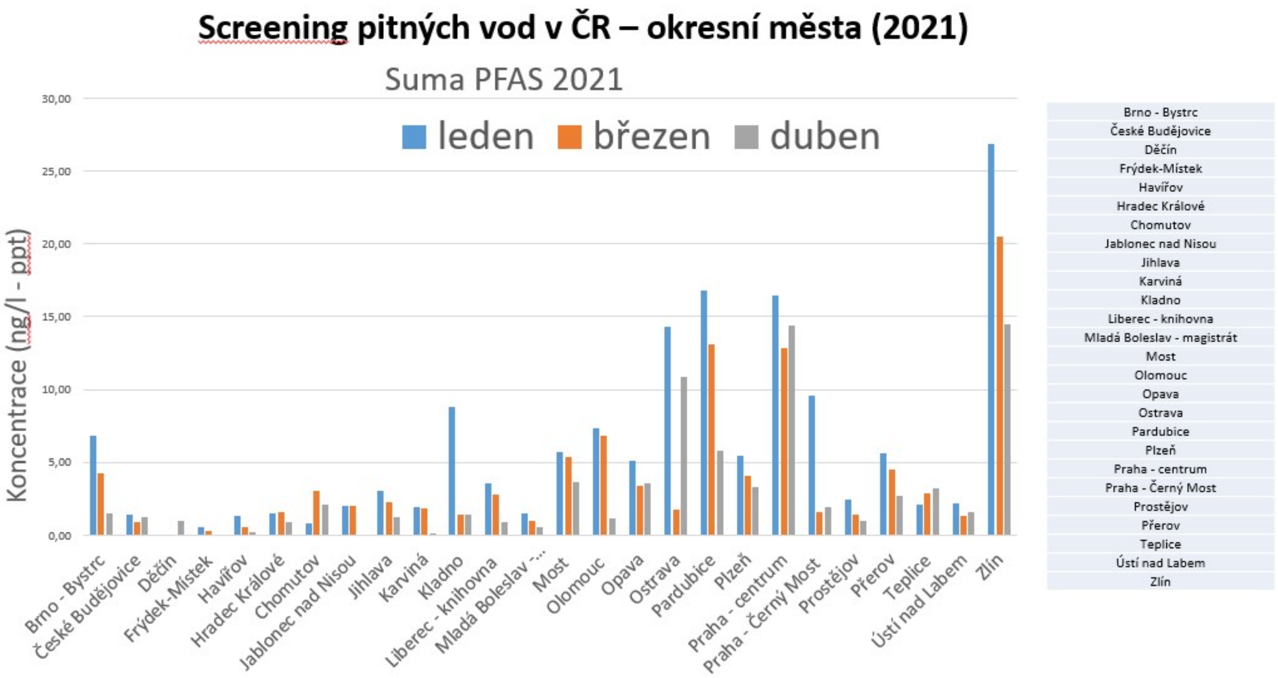
Annex 1: Yet unpublished results of TEOF/individual PFAS analysis in outdoor textiles sold on the European and Asian Market. Arnika had them analyzed at the Institute for Environmental Studies, Faculty of Science, Charles University, Prague in 2023. To be published by Arnika end of 2023/beginning 2024

Sample ID	**Sample type**	**Country an year of purchase**	**Product name (if any)**	**Brand**	**Made in**	**sum PFAS ng/g (ppb)**	**TOEF ng/g**
CZ-OUTD-01A	jacket	Czechia, January 2022	Elsho girl´s jacket Pink children´s jacket	AlpinePro	Bangladesh	<LOD	109 530,87
CZ-OUTD-02A	jacket	Czechia, January 2022	Inucon boy´s jacket Dark blue children´s jacket	Loap	China	226,56	36 038,39
CZ-OUTD-03A	jacket	Czechia, January 2022	Milo J Blue-green children´s jacket	Kilpi	China	54,13	9 213,58
CZ-OUTD-04A	jacket	Czechia, January 2022	Zally kids jacket	Husky	China	66,81	4 253,74
CZ-OUTD-05A	jacket	Czechia, January 2022	Zunat kids jacket	Husky	China	377,88	15 782,41
CZ-OUTD-06A	jacket	Czechia, January 2022	Peeta Junior children´s jacket	Hannah	China	441,90	73 357,78
CZ-OUTD-07A	jacket	Czechia, February 2022	children´s jacket	NordBlanc	China	825,06	3 934,52
CZ-OUTD-08A	jacket	Czechia, February 2022	teenager´s jacket	Progress	China	1 304,68	45 129,29
CZ-OUTD-09A	jacket	Czechia, February 2022	teenager´s jacket	Woox	China	93,51	5 435,68
CZ-OUTD-10A	jacket	Czechia, February 2022	teenager´s jacket	NorthFinder	Vietnam	7,87	5 905,79
RS-PFAS-01	jacket	Serbia, October 2022	Children's jacket for boys "Start Action"	LC Waikiki	Turkey	8,98	<LOD
RS-PFAS-02	jacket	Serbia, October 2022	Children's jacket for girls 14+	Terranova brand	Myanmar	<LOD	<LOD
RS-PFAS-03	jacket	Serbia, October 2022	Children's outdoor softshell jacket for boys "A.W.S Active" (9-10 y)	Icepeak, A.W.S, Luhta Sportswear company, Finland	China	<LOD	<LOD

RS-PFAS-04	jacket	Serbia, October 2022	Baby's jacket for boys "So Cute"(2-3 y)	PEPCO baby; Made in Bangladesh	Bangladesh	<LOD	<LOD
NL-PFAS-01	jacket	Netherlands, July 2022	Flash Challenger Windbreaker	Columbia	Bangladesh	<LOD	<LOD
NL-PFAS-02	jacket	Netherlands, July 2022	Sailing 300	Tribord	Vietnam	<LOD	<LOD
NL-PFAS-03	jacket	Netherlands, July 2022	Centro jr Softshell tussenjas - Swamped	Protest	China	<LOD	<LOD
NL-PFAS-04	jacket	Netherlands, July 2022	Kids´ Unisex Amterdam Proof regenjas	Scotch&Soda	China	5,70	<LOD
PL-PFAS-01	jacket	Poland, September 2022	children´s jacket	IGUANA	China	<LOD	<LOD
PL-PFAS-02	jacket	Poland, September 2022	women´s jacket	North Face	Bangladesh	<LOD	<LOD
DE-PFAS-01	jacket	Germany August 2022	children´s jacket	Erima	Bangladesh	<LOD	<LOD
DE-PFAS-02	jacket	Germany, August 2022	children´s jacket	CMP	Bangladesh	4,93	<LOD
UK-PFAS-01	jacket	UK, October 2022	Junior Mini Tornado Waterproof Jacket	Peter Storm	China	<LOD	<LOD
UK-PFAS-02	jacket	UK, October 2022	Kids' Hybrid Jacket	Berghaus	China	<LOD	<LOD
UK-PFAS-03	jacket	UK, October 2022	Seasons Printed Kids Water Resistant Padded Jacket	Mountain Warehouse	China	765,10	<LOD
UK-PFAS-04	overalls	UK, October 2022	Kids' Charco Waterproof Puddle Suit | Extreme Green Frog	Regatta	Myanmar	<LOD	<LOD
UK-PFAS-05	overalls	UK, October 2022	Baby Fox Shower Resistant Puddlesuit, Orange	John Lewis	China	<LOD	<LOD
UK-PFAS-06	jacket	UK, October 2022	Orange Colour Block Waterproof Jacket	George (ASDA)	China	<LOD	<LOD
UK-PFAS-07	jacket	UK, October 2022	Blue & Black Waterproof Jacket	Tu (Sainsbury)	China	<LOD	<LOD

MN-PFAS-01	jacket	Montenegro, December 2022	Girls Winter jacket	OVS	Myanmar	24,13	424,56
MN-PFAS-02	jacket	Montenegro, December 2022	Girls Winter jacket	De Facto	China	6,08	2 907,89
MN-PFAS-03	jacket	Montenegro, December 2022	Kids light jacket	Waikiki	China	<LOD	1 779,30

Annex 2:
Unpublished concentrations of PFAS in tap water in regional cities measured in January, March and April, Czechia, 2021. Analyses performed by prof. Tomas Cajthaml team at the Institute for Environmental Studies, Faculty of Science, Charles University.



Annex 3. Unpublished concentrations of PFAS in mineral water and ground water sources in Czechia as found in bottled waters sold on the Czech market. 2021

Zdroj/koncentrace (ng/l)	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFOS	GenX	∑PFAS
PITNÁ VODA nesycená								0.0
BUDIŠ								0.0
DOBRÁ VODA neperlivá			0.1					0.1
DOBRÁ VODA jemně perlivá								0.0
NATURA neperlivá			0.1		0.1			0.3
NATURA jemně perlivá		0.1	0.2				0.1	0.5
MATTONI neperlivá	0.2	0.3	0.2	0.3	0.1	0.3		1.5
MATTONI perlivá	0.2	0.3	0.2	0.3	0.1	0.2		1.4
AQUILA první voda			0.1					0.1
MAGNESIA		0.1					0.1	0.3