

REACH Restriction Process on PFAS

Comments and perspectives by the EMEA Synthetic Turf Council (ESTC) on recycling of synthetic turf surfaces in the context of the proposed PFAS restriction

FROM: **EMEA Synthetic Turf Council ESTC**

USE: **Recycling of Synthetic Turf surfaces**

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Executive Summary and Conclusion

ESTC COVERS THE ENTIRE VALUE CHAIN OF SYNTHETIC TURF

ESTC, the EMEA Synthetic Turf Council, is the industry association for the synthetic turf industry and has the purpose to serve as the forum to promote, develop, grow and advocate for the synthetic turf industry by means of close collaboration with members, end-users, sports governing bodies and legislators. It covers the entire value chain of Synthetic Turf and currently has more than 150 members. This document has been prepared by EPPA SA for ESTC for submission as part of the PFAS Public Consultation process. It intends to raise the awareness and knowledge of authorities and other stakeholders with regards to the specificities as well as technical, economic and regulatory benefits of Synthetic Turf, with particular focus on end-of-life recycling of Synthetic Turf applications.

MANY BENEFITS TO SOCIETY

Synthetic turf sports and landscape surfaces provide many benefits to society. They allow larger numbers of people to play sport, maximising land utilisation; they allow sport to be played safely in most weather conditions; and they require fewer resources to maintain them in an acceptable condition, without using chemical treatments and fertilisers, and with less or almost no water. Synthetic turf playing fields exponentially increase playing and practice time because they can be used daily, in all types of weather, without worry of damage. Landscaping (synthetic) Turf is turf used to enhance landscapes by providing a durable, all weather alternative to natural turf.

FOCUS ON END-OF-LIFE

Historically, fluoropolymers have been used in very small quantities as a processing aid to assist in the extrusion of the yarns used to make synthetic turf carpets. ESTC does not believe any other forms of PFAS are intentionally added to any of the other components that make up a synthetic turf carpet or the other parts of a synthetic turf system. The focus of this submission is therefore on the end-of-life phase of Synthetic Turf.

SYNTHETIC TURF CONTRIBUTES TO THE CIRCULAR ECONOMY

Over the past couple of years, the synthetic turf industry and its partners have established a strong commitment and focus on recycling of synthetic turf at the end of its (first) life. ESTC and its members fully support the circular economy concept and are developing new ways of manufacturing synthetic turf surfaces that can be more easily reused or recycled in the future.

SIGNIFICANT IMPACTS EXPECTED

In case a restriction would prevent recycling of synthetic turf, the impacts would be significant – they would range from foregone investments (recycling facilities and related supply chains as well as R&D), strong uncertainty of municipal and private owners related to their potential investments into synthetic turf, furthermore an end to recycling of the existing many thousand Synthetic Turf installations, thus valuable components no longer would have a second life but would rather be either landfilled or incinerated. Last, but not least, it is likely that less Synthetic Turf fields would be installed. This would mean that the benefits of these installations for society would no longer be available.

CONCLUSION AND OUTLOOK – A DEROGATION IS REQUESTED

The assessment presented in this document reasonably justifies the request for time-unlimited derogations for the use of Synthetic Turf recycling. Therefore, ESTC requests this time-unlimited derogation (exemption from the proposed restriction) for Synthetic Turf recycling.

Introduction

ESTC, the EMEA¹ Synthetic Turf Council, is the industry association for the synthetic turf industry and has the purpose to serve as the forum to promote, develop, grow and advocate for the synthetic turf industry by means of close collaboration with members, end-users, sports governing bodies and legislators. It covers the entire value chain of Synthetic Turf and currently has more than 150 members:



In its vision, ESTC seeks to engage with all stakeholders in the synthetic turf industry, including members, end-users, sports governing bodies and legislators. The strategy of ESTC is based on, and driven by, the four pillars of Advocacy, Knowledge, Marketing and Networking. As a high-tech, innovative industry, we are moving towards circularity and, as we develop this circular strategy, we consider sustainability implications across the entire synthetic turf supply chain.

Purpose of this document

On 13 January 2023, the Competent Authorities (CAs) of the Netherlands, Germany, Sweden, Denmark, and Norway submitted a joint proposal to ECHA for a broad restriction under REACH of a group of per- and polyfluorinated substances (PFAS) within the EU unless derogations are granted. The proposed restriction aims to limit the risks to the environment and human health from the manufacture and use of a wide range of PFAS due to their persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) properties. All PFAS in scope of this restriction proposal are meant to be either persistent themselves or degrade to other persistent PFAS. The opinion-development phase at ECHA takes 12 to 15 months. After this, the proposal, and the opinions of RAC and SEAC are forwarded to the Commission for decision-making by the Commission with the Member States. The entry into force of a potential restriction is anticipated to take place in 2025 and become effective in 2026/2027.

PFAS are a group of more than 10,000 synthetic (i.e., man-made) chemicals. PFAS have been produced in large quantities and used in a variety of industrial, commercial, and consumer applications since the late 1940s. The German authorities proposed in May 2017 criteria for identifying such chemicals in the context of EU REACH Regulation (EC) No 1907/2006. Substances meeting these criteria are referred to as either persistent, mobile, and toxic or very persistent and very mobile (vPvM), although those properties do not apply to all the chemicals included in the broad OECD definition used as the basis for the current PFAS restriction proposal.

¹ EMEA = Europe, Middle-East and Africa

In this regard, the restriction proposal highlights two potential restriction options (ROs) referred to as RO1 and RO2.

- RO1 entails a full ban on PFAS chemicals, covering their usage, manufacturing, and placing on the market in the EU with no derogations and a transition period of 18 months from the entry into force of the restriction.
- RO2 covers the same scope of restriction while introducing specific time-limited derogations. In addition to an 18-month transition period, it would allow for either 5- or 12-year derogation period, depending on the application.

This document has been prepared by EPPA SA² for ESTC for submission as part of the PFAS Public Consultation process. It intends to raise the awareness and knowledge of authorities and other stakeholders with regards to the specificities as well as technical, economic and regulatory benefits of Synthetic Turf, with particular focus on end-of-life recycling of Synthetic Turf applications. It highlights the significant impacts that are expected should the proposed restriction be implemented - bringing complementary added value to the European Union and Member States authorities to support an informed decision.

Market Overview and Key Uses

Market overview

Synthetic turf sports and landscape surfaces provide many benefits to society. They allow larger numbers of people to play sport, maximising land utilisation; they allow sport to be played safely in most weather conditions; and although not maintenance-free, they require fewer resources to maintain them in an acceptable condition, without using chemical treatments and fertilisers, and with less or almost no water.

Synthetic turf playing fields exponentially increase playing and practice time because they can be used daily and in all types of weather, without worry of damage. Playability is enhanced since the fields remain uniform and consistent, season after season, providing they are maintained correctly. Recent studies undertaken for Sport England in the UK show synthetic turf sports fields are used for up to 45 hours per week and receive over 1400 user visits per week. High quality fibre reinforced natural grass sports fields can only accommodate 10 to 15 hours of use per week but require extensive maintenance and renovation works to achieve this level of use through a playing season. Lower quality grass fields are often only capable of accommodating 4 to 6 hours of use during the winter months, but are actually expected to be available for community play throughout a season; often meaning games have to be cancelled.

² EPPA SA/NV, Place du Luxembourg 2, 1050 Brussels, Belgium, EU transparency register: 31367501249-92

In summary, Synthetic Turf in sports has significant benefits:



Landscaping (synthetic) Turf is turf used to enhance landscapes by providing a durable, all weather alternative to natural turf. The primary reason for using Landscaping Turf is normally visual and comfort is secondary. Other reasons for installing landscape synthetic turf include saving water or reduced maintenance costs.

When used for landscaping, synthetic turf helps reduce noxious emissions from lawn mowers and reduces grass clippings, which are reported as the third largest component of municipal solid waste in landfills. Increasingly, consumers and markets are becoming more environmentally aware, and the desire to incorporate sustainability assessments into the selection process when buying a product is becoming ever more common. This is especially the case within the construction industry and also when public funding is involved. As facilities with synthetic turf surfaces often fall into both of these categories, this is an increasingly significant consideration for ESTC members.

Today there are a diverse range of synthetic turf surfaces used for sports such as football, hockey, tennis, rugby, cricket, Gaelic sports, American football and baseball. Precise numbers are hard to establish but estimates suggest there are over 40,000 full size sports fields and 70,000 smaller fields and courts in use today across Europe.

Alongside the use of synthetic turf surfaces for sports applications, there is a growing use of synthetic turf in the landscaping and recreational sectors. The market, often residential or commercial, and the square meterage used for each installation are very different to that used in the sports sector. There is no comprehensive data, but a 2019 market report states that landscape and leisure applications accounted for 41% of the global synthetic turf market market (data on the use as landscaping for public or private use).

Key uses

Surface constructions of Synthetic Turf fields differ depending on their intended use. Generally, for sports uses, they can be split into two main groups; long pile synthetic turfs that are designed to replicate the playing characteristics of natural grass, and used by sports such as football and rugby, and short pile surfaces that have evolved to provide the playing characteristics required by sports such as tennis, hockey, korfbal, futsal and cricket.

Irrespective of the pile length, the surface may contain an infill, or it may be non-filled. Depending on the type of surface, the infill may be a single layer acting as a stabilising ballast (normally a rounded sand), or two layers of infill may be used, the lower one being a stabilising infill and the upper one a performance infill. The performance infill can be made from rubber or plastic granules, or some form of organic granulate (cork, coconut fibre, wood chips etc). The upcoming restriction on Microplastics is expected to ban the use of polymeric synthetic turf infill within 8 years of Entry into Force.

Depending on the intended use, the synthetic turf surface may be laid over a shockpad or elastic underlayer, or it may be laid directly onto the base pavement of the field or court. Shockpads can be found in two generic groups: pre-fabricated shockpads and in-situ laid or elastic (e) layers. Pre-fabricated shockpads are manufactured in a factory as tiles or rolls, transported to the field and installed onto the sub-base of the field. In-situ shockpads are produced from binders (normally polyurethanes) and elastomeric granulate mixes. The two components are mixed on site, laid with a paving machine onto the field's sub-base and allowed to cure.

Synthetic turf sports surfaces typically, have a design life of 10 years, but many are used for longer.

Related to the proposed PFAS restriction, synthetic turf so far is not covered as an application. It therefore needs to be added as part of the missing applications in Question 6 of the Public Consultation.

Fluoropolymers are technically a form of PFAS. However, "fluoropolymers meet the criteria of being polymers of low concern for potential adverse effects on human health or the environment" (*A Critical Review of the Application of Polymer of Low Concern Regulatory Criteria to Fluoropolymers II: Fluoroplastics and Fluoroelastomer*, Koreniowski, Buck, et al, National Library of Medicine, 2022)

Historically, fluoropolymers have been used in very small quantities as a processing aid to assist in the extrusion of the yarns used to make synthetic turf carpets.

ESTC does not believe any other forms of PFAS are intentionally added to any of the other components that make up a synthetic turf carpet or the other parts of a synthetic turf system.

The focus of this submission is therefore on the end-of-life phase of Synthetic Turf. In order to get an initial transparency related to potential PFAS content of End of Life synthetic turf taken for recycling, ESTC and its members performed a small set of tests. The table summarises these tests.

Sets of samples from two recycling companies, one shockpad producer and one yarn producer were sent for testing with the following results:

Company	Type of test performed	Test performed by	Test result
Company 1 (recycling sample)	Standard SVHC testing with limits in the PPM range	SGS	No PFAS detected
	Testing for 31 PFAS using ISO23702-1 with detection limits 0.01 ppM using GC-MS and LC-MS	SGS	All tests below detection limit
Company 2 (sample of virgin material)	Testing for 18 PFAS and total PFOS according to DIN 38414-14 using high performance liquid chromatography and mass spectrometric detection (HPLC-MS/MS)	ALS UK	Results below <1µg/KG which is below 0.001PPM
	Parr Bomb analysis of a virgin processing aid (total fluorine test)		Total fluorine level detected at 0.014% and

			0.873%. It cannot be determined if these are PFAS or not.
Company 3 (4 recycled turf pellet samples and 4 recycled backing pellet samples)	Testing for 34 PFAS according to DIN EN 17681-1/2 Determination of PFOA, PFOS and PFHxS, C9-C14 PFCA and PFHxA according to: Textiles and textile products - Organic fluorine - Determination of non- /volatile-compounds by extraction method using liquid-/gas-chromatography.	TÜV Rheinland	Results were below the detection limit or not detected. Test sensitivity was 1µg/KG which is 0.001PPM
Company 4 (foam sample)	Sample foam cut was tested using 24 h Eluate acc. to DIN EN 12457-4 (2003) using LC-MS/MS	Chemical Laboratory Dr. Stegemann	Results were <0.211µg/l which is <0.0002PPM In the eluate of this sample no PFAS were detected. The listed value is the sum of the limits of quantification of all 11 compounds

Synthetic turf sports surfaces have been in use now for over 50 years and for most of this time, when they needed changing, they have been lifted and disposed of in the most economical and convenient way. Often this has meant the surfaces ended up in landfill or being incinerated. Today, society is much more environmentally aware, and this is encouraging governments, policy makers and suppliers to look at new ways of doing business. Legislators are beginning to make policies which require that sustainability and full life cycle impacts are considered in procurement and supply chains.

Therefore, recycling nowadays is at the forefront of considerations in the entire synthetic turf industry value chain. As the demand and need to dispose of end of life synthetic turf surfaces in an environmentally-sensitive way grows, ESTC members are making major investments in new technologies that are allowing the surfaces to be reprocessed in an environmentally sustainable way for the first time. Recognising and wishing to encourage these developments, ESTC has produced this guide to assist everyone involved with the end of life disposal of synthetic turf sports fields. It highlights current options and best practice and gives an overview on the legal obligations that need to be considered before a surface is disposed of.

From a legal perspective, in most countries when an EOL synthetic turf surface is lifted for processing (in whatever form), it meets the definition of WASTE and needs to be treated accordingly. Increasingly, disposal of waste is covered by legislation and the handling and processing of waste is tightly regulated. Strict rules and protocols need to be complied with and there are often severe penalties for those that do not comply.

As a general rule, the owner of an EOL synthetic turf surface has the sole responsibility to transfer ownership of the waste materials to a certified waste disposal company, and to then ensure that the field is properly disposed of. This legal obligation cannot be transferred and has to be based on valid documentation which can be verified with the national enforcement or regulatory authorities. Failure to comply with these regulations can result in owners being heavily fined for non-compliance. Therefore, it is of the utmost importance to choose a waste handling partner with a verified and proven process. Within the European Union and United Kingdom, the Waste Framework Directive (Directive 2008/98/EC) applies. This sets out the basic concepts and definitions related to waste management,

such as definitions of waste, recycling, recovery, etc. It explains when a product becomes waste, when waste can cease being classified as waste and becomes a secondary raw material, and how to distinguish between waste and by-products. The Directive lays down basic waste management principles: It requires that waste be managed without endangering human health and harming the environment.

Recycling at the end-of-life phase of a Synthetic Turf for a sports use typically covers the following phases:



It is important to understand the potential recycling pathway of the key components of Synthetic Turf at the end-of-life stage. In the example of a Synthetic Turf pitch for sports (e.g., football), the average life of a full size pitch is around 10 years, based on standard quality, proper installation, adequate maintenance, normal exposure to sunlight and normal usage over its lifetime. It covers around 7,000m² and weighs on average 220-240 tonnes, distributed over the following:

COMPONENTS	%	WHAT CAN WE DO WITH IT ?
SAND	49%	REUSED IN PITCHES
INFILL (if present)	45%	REUSED IN PITCHES OR RECYCLED
BACKING	2%	RECYCLED INTO NEW PRODUCTS
TURF FIBRES	3%	RECYCLED INTO NEW PRODUCTS
WASTE	1%	DISPOSED OF

In Annex 1, further information is provided related to useful definitions (waste, recycling, reuse, ...).

Over the past couple of years, the synthetic turf industry and its partners have established a strong commitment and focus on recycling of synthetic turf at the end of its (first) life.

A significant number of recycling facilities across Europe has been established, as shown below:



The end of life disposal of residential or commercial synthetic turf surfaces is handled in different ways. ESTC is currently producing guidance on the best ways to dispose of these forms of synthetic turf surfacing.

The following table gives an overview of the typical composition and pathway of components of end-of-life synthetic turf recycling:

Component	Typical composition	Recycling technology	Recycling pathway option
Carpets and grass	Mixture of plastics and polymers	Current mechanical recycling – Future – potentially chemical treatments in addition	⇒ Sports fencing rebound boards ⇒ Containment barriers for synthetic turf sports fields ⇒ Leisure furniture ⇒ Residential decking
Infill	Synthetic infill Organic infill Sand	Current – infill is re-used or recycled Future – Synthetic infill is no longer allowed following the Microplastics restriction	⇒ Re-used in pitches ⇒ Shockpads and athletic surfaces ⇒ Carpet underlays ⇒ Use in construction and road building industries
Shockpads	Either pre-fabricated in a factory (tiles or rolls, produced as foamed or bounded plastic layers) or installed in-situ (as a mix of elastomeric granules and a binder)	Current mechanical recycling –	⇒ New shockpads ⇒ Playground safety surfaces, ⇒ Athletics tracks ⇒ Moulded rubber products. ⇒ Polyethylene and polyurethane foam shockpads can also be shredded into foam chips that can be used to make new shockpads and other reconstituted foam products

Working with the European Commission and the European Life Funding programme ESTC is currently finalising the preparation of Product Environmental Footprint Category Rules for synthetic turf surfaces. These rules will assess the environmental impact of end-of-life disposal and help highlight the environmental benefits of recycling. It is expected that this will increase the awareness and demand of recycling facilities across Europe.

Perspective on Emissions and Migration

As mentioned before, ESTC does not have any general indications that PFAS are used in the production or installation of Synthetic Turf surfaces. However, ESTC also cannot rule it out completely, in particular in the case of the thousands of fields that have already been installed over the past decades and that are now approaching their end-of-life phase. At this phase of their life, these Synthetic Turf surfaces are then getting ready to enter the recycling workstreams as described before. ESTC does not have any detailed information related to the PFAS content of End-of-Life synthetic turf.

Perspective on Impacts and Derogation requested

There are two possible scenarios related to Synthetic Turf in the context of the proposed PFAS restriction:

- ⇒ In case the process of recycling synthetic turf is **not covered as a use** in the proposed restriction legislation, then the recycling would be prohibited after Entry into Force plus 18 months in case PFAS are detectable
- ⇒ If the use is covered by the proposed PFAS restriction by addition to the list of uses as requested in this submission to the Public Consultation, but it is **not derogated as requested in this document**, the same consequences would apply

The impacts would be clear and straightforward:

- 1) As recycling of Synthetic Turf at end-of-life would no longer be allowed, the investments done by the industry into recycling facilities and related supply chains as well as related Research & Development would be foregone.
- 2) Municipal and private investors would face strong uncertainty related to their potential investments into Synthetic Turf installations when it comes to the end-of-life situation. Most likely, they would be faced with a situation that recycling is no longer possible, which is highly undesirable from their perspective.
- 3) All end-of-life waste from the existing many thousand Synthetic Turf installations (for sports or landscaping uses) could no longer be recycled. This means that the valuable components (predominantly plastics and polymers) no longer would have a second life but would rather have to be either landfilled or incinerated. This is an undesirable consequence, and it would contradict the EU target towards a Circular Economy. Further to that, this would burden the respective landfill or incineration facilities with significant additional volumes unnecessarily.
- 4) Last, but not least, it is likely that less Synthetic Turf fields would be installed. This would mean that the benefits of these installations for society as described before would no longer be available.

Derogation requested

The assessment presented in this document reasonably justifies the request for time-unlimited derogations for the use of Synthetic Turf recycling. Therefore, ESTC requests a time-unlimited derogation (exemption from the proposed restriction) for Synthetic Turf recycling.

Perspective on sustainability – circular economy

The United Nations, the European Union and leading national governments are all determined to protect our planet so that it can support the needs of present and future generations. Recognising this need, ESTC is delighted to be working with the European Commission to develop an industry-wide procedure to analyse the life cycle and environmental impact of synthetic turf sports surfaces. From production of the raw materials from which the surfaces are made, through manufacturing of the surfaces, their installation, operation & maintenance, and finally end of life disposal, the Product Environmental Footprint Category Rules (PEF CR) being developed will become the standard by which all synthetic turf sports surfaces will be assessed.

A key component of the European approach to reducing human impact on the planet is the circular economy. This is a model of economic, social and environmental production and consumption that aims to build a sustainable society through the use of recyclable and sustainable resources. This requires design, production and consumption to be undertaken in a sustainable way. ESTC is the trade association for the synthetic turf industry in the EMEA region. Its objective and purpose is to serve, promote, develop, grow and advocate for the synthetic turf industry. We work in both the sports and landscaping sectors. ESTC and its members fully support this concept and are now committing significant resources to developing new ways of manufacturing synthetic turf surfaces that can be more easily reused or recycled in the future.

LINK BETWEEN THIS DOCUMENT AND THE PUBLIC CONSULTATION QUESTIONS

The following overview **connects this document to the public consultation questions**. It shows the responses in the official sections of the public consultation system within the space given, and it guides interested parties towards the sections of this document where further detail can be found that did not fit into the text limitations given by the system.

<u>Section I and Section II – personal information and organisation:</u>
<u>Response</u> – this information will be provided in the system.
<u>Section III – Non-confidential comments</u>
<u>Response</u> – EPPA performed an analysis for ESTC....
<u>Specific information requests</u>
<u>Public consultation question 1 (Q1):</u>
<u>Sectors and (sub-)uses: Please specify the sectors and (sub-)uses to which your comment applies according to the sectors and (sub-)uses identified in the Annex XV restriction report (Table 9). If your comment applies to several sectors and (sub-)uses, please make sure to specify all of them.</u>
<u>Response and link to further information in this document:</u>
<u>Q1:</u> Historically, fluoropolymers have been used in very small quantities as a processing aid to assist in the extrusion of the yarns used to make synthetic turf carpets. ESTC does not believe any other forms of PFAS are intentionally added to any of the other components that make up a synthetic turf carpet or the other parts of a

synthetic turf system. The focus of this submission is therefore on the end-of-life phase of Synthetic Turf. The attached document provided a more detailed description and argumentation (named ESTC PFAS – Public consultation submission - 2023-09-21 - final)

Public consultation question 2 (Q2):

Emissions in the end-of-life phase: The environmental impact assessment does not cover emissions resulting from the end-of-life phase. To get a better understanding of the extent of the resulting underestimation, (sub-)use-specific information is requested on emissions across the different stages of the lifecycle of products, i.e., the manufacture phase, the use phase, and the end-of-life phase. Please provide justifications for the representativeness of the provided information. In particular:

Please provide, at the (sub-)use level, an indication of the share of emissions (as percentages) attributable to these three different stages. An indication of annual emission volumes in the end-of-life phase at sector or sub-sector level would also be appreciated.

If possible, please provide for each (sub-)use what share of the waste (as percentages) is treated through incineration, landfilling and recycling. Please provide information to justify the estimates as well as information on the form of recycling referred to.

Response and link to further information in this document:

Q2:

ESTC does not have any general indications that PFAS are used in the production or installation of Synthetic Turf surfaces. However, ESTC also cannot rule it out completely, in particular in the case of the thousands of fields that have already been installed over the past decades and that are now approaching their end-of-life phase. At this phase of their life, these Synthetic Turf surfaces are then getting ready to enter the recycling workstreams. ESTC does not have any detailed information related to the PFAS content of End-of-Life synthetic turf. Working with the European Commission and the European Life Funding programme ESTC is currently finalising the preparation of Product Environmental Footprint Category Rules for synthetic turf surfaces. These rules will assess the environmental impact of end-of-life disposal and help highlight the environmental benefits of recycling. It is expected that this will increase the awareness and demand of recycling facilities across Europe. Further reference is made to the attached document (named ESTC PFAS - Public consultation submission - 2023-09-21 - final)

Public consultation question 3 (Q3):

Emissions in the end-of-life phase: With respect to waste management options, additional information is requested on the effectiveness of incineration under normal operational conditions (for different waste types, e.g., hazardous, municipal) with respect to the destruction of PFAS and the prevention of PFAS emissions.

Response and link to further information in this document:

Q3:

ESTC would like to point out that the preferred end-of-life treatment for synthetic turf is recycling. This is also the focus of the attached document (named ESTC PFAS - Public consultation submission - 2023-09-21 - final).

Public consultation question 4 (Q4):

Impacts on the recycling industry: To get an understanding of the impacts of the proposed restriction on the recycling industry, information is requested on:

The impacts that the concentration limits proposed in paragraph 2 of the proposed restriction entry text (see table starting on page 4 of the summary of the Annex XV restriction report) have on the technical and economic feasibility of recycling processes (together with a clear indication on the waste streams to which the described impacts relate).

The measures that recyclers would need to take to achieve the proposed concentration limits.

The costs associated with these measures.

Response and link to further information in this document:

Q4:

In case a restriction on PFAS would prevent recycling of synthetic turf, the impacts would be significant:

- 1) As recycling of Synthetic Turf at end-of-life would no longer be allowed, the investments done by the industry into recycling facilities and related supply chains as well as related Research & Development would be foregone.
- 2) Municipal and private investors would face strong uncertainty related to their potential investments into Synthetic Turf installations when it comes to the end-of-life situation. Most likely, they would be faced with a situation that recycling is no longer possible, which is highly undesirable from their perspective.
- 3) All end-of-life waste from the existing many thousand Synthetic Turf installations (for sports or landscaping uses) could no longer be recycled. This means that the valuable components (predominantly plastics and polymers) no longer would have a second life but would rather have to be either landfilled or incinerated. This is an undesirable consequence, and it would contradict the EU target towards a Circular Economy. Further to that, this would burden the respective landfill or incineration facilities with significant additional volumes unnecessarily.
- 4) Last, but not least, it is likely that less Synthetic Turf fields would be installed. This would mean that the benefits of these installations for society as described before would no longer be available. Further reference is made to the attached document (named ESTC PFAS - Public consultation submission - 2023-09-21 - final)

Public consultation question 5 (Q5):

Proposed derogations – Tonnage and emissions: Paragraphs 5 and 6 of the proposed restriction entry text (see table starting on page 4 of the summary of the Annex XV restriction report) include several proposed derogations. For these proposed derogations, information is requested on the tonnage of PFAS used per year and the resulting emissions to the environment for the relevant use. Please provide justifications for the representativeness of the provided information.

Response and link to further information in this document:

Q5:

ESTC does not have any general indications that PFAS are used in the production or installation of Synthetic Turf surfaces. Further reference is made to the attached document (named ESTC PFAS - Public consultation submission - 2023-09-21 - final)

Public consultation question 6 (Q6):

Missing uses – Analysis of alternatives and socio-economic analysis: Several PFAS uses have not been covered in detail in the Annex XV restriction report (see uses highlighted in blue and orange in Table A.1 of Annex A of the Annex XV restriction report). In addition, some relevant uses may not have been identified yet. For such uses, specific information is requested on alternatives and socio-economic impacts, covering the following elements:

The annual tonnage and emissions (at sub-sector level) and type of PFAS associated with the relevant use.

The key functionalities provided by PFAS for the relevant use.

The number of companies in the sector estimated to be affected by the restriction.

The availability, technical and economic feasibility, hazards and risks of alternatives for the relevant use, including information on the extent (in terms of market shares) to which alternative-based products are already offered on the EU market and whether any shortages in the supply of relevant alternatives are expected.

For cases in which alternatives are not yet available, information on the status of R&D processes for finding suitable alternatives, including the extent of R&D initiatives in terms of time and/or financial investments, the likelihood of successful completion, the time expected to be required for substitution (including any relevant certification or regulatory approvals) and the major challenges encountered with alternatives which were considered but subsequently disregarded.

For cases in which substitution is technically and economically feasible but more time is required to substitute: the type and magnitude of costs (at company level and, if available, at sector level) associated with substitution (e.g., costs for new equipment or changes in operating costs);

the time required for completing the substitution process (including any relevant certification or regulatory approvals);

information on possible differences in functionality and the consequences for downstream users and consumers (e.g., estimations of expected early replacement needs or expected additional energy consumption);

information on the benefits for alternative providers.

For cases in which substitution is not technically or economically feasible, information on what the socio-economic impacts would be for companies, consumers, and other affected actors. If available, please provide the annual value of EU sales and profits of the relevant sector, and employment numbers for the sector.

Response and link to further information in this document:

Q6:

Synthetic turf so far is not covered as an application. It therefore needs to be added as part of the missing applications. The benefits of synthetic turf itself and particularly its recycling are described in more detail in the attached document (named ESTC PFAS - Public consultation submission - 2023-09-21 - final)

Public consultation question 7 (Q7):

Potential derogations marked for reconsideration – Analysis of alternatives and socio-economic analysis: Paragraphs 5 and 6 of the proposed restriction entry text (see table starting on page 4 of the summary of the Annex XV restriction report) include several potential derogations for reconsideration after the consultation (in [square brackets]). These are uses of PFAS where the evidence underlying the assessment of the substitution potential was weak. The substitution potential is determined on the basis of i) whether technically and economically feasible alternatives have already been identified or alternative-based products are available on the market at the assumed entry into force of the proposed restriction, ii) whether known alternatives can be implemented before the transition period ends (taking into account time requirements for substitution and certification or regulatory approval), and iii) whether known alternatives are available in sufficient quantities on the market at the assumed entry into force to allow affected companies to substitute.

A summary of the available evidence as well as the key aspects based on which a derogation is potentially warranted are presented in Table 8 in the Annex XV restriction report, with further details being provided in the respective sections in Annex E.

To strengthen the justifications for a derogation for these uses, additional specific information is requested on alternatives and socio-economic impacts covering the elements described in points a) to g) in question 6 above.

Response and link to further information in this document:

Q7:

No response by ESTC (no relevance)

Public consultation question 8 (Q8):

Other identified uses – Analysis of alternatives and socio-economic analysis: Table 8 in the Annex XV restriction report provides a summary of the identified sectors and (sub-)uses of PFAS, their alternatives and the costs expected from a ban of PFAS. More details on the available evidence are provided in the respective sections in Annex E.

For many of the (sub-)uses, the information on alternatives and socio-economic impacts was generic and mainly qualitative. In particular, evidence on alternatives was inconclusive for some applications falling under the following (sub-)uses: technical textiles, electronics, the energy sector, PTFE thread sealing tape, non-polymeric PFAS processing aids for production of acrylic foam tape, window film manufacturing, and lubricants not used under harsh conditions.

More information is needed on alternatives and socio-economic impacts to conclude on substitution potential, proportionality, and the need for specific time-limited derogations. Therefore, specific information (if not already included in the Annex XV restriction report or covered in the questions above) is requested on alternatives and socio-economic impacts covering the elements listed in points a) to g) in question 6 above.

Response and link to further information in this document:

Q8:

No response by ESTC (no relevance)

Public consultation question 9 (Q9):

Degradation potential of specific PFAS sub-groups: A few specific PFAS sub-groups are excluded from the scope of the restriction proposal because of a combination of key structural elements for which it can be expected that they will ultimately mineralize in the environment. RAC would appreciate to receive any further information that may be available regarding the potential degradation pathways, kinetics or produced metabolites in relevant environmental conditions and compartments for trifluoromethoxy, trifluoromethylamino- and difluoromethanedioxy-derivatives.

Response and link to further information in this document:

Q9: These sub-groups are outside of the scope of this response and this document, therefore no information related to Q9 will be provided here.

Public consultation question 10 (Q10):

Analytical methods: Annex E of the Annex XV restriction report contains an assessment of the availability of analytical methods for PFAS. Analytical methods are rapidly evolving. Please provide any new or additional information on new developments in analytics not yet considered in the Annex XV restriction report.

Response and link to further information in this document:

Q10:

The focus of this submission by ESTC is on end-of-life recycling of synthetic turf. Testing for PFAS content has been a significant challenge, as neither standardised nor broad and comprehensive tests are available on the market at this point. ESTC therefore supports the efforts and intention of the authorities to improve the availability and quality of tests available.

Section IV and Section V – non-confidential and confidential attachments:

Response – [EPPA note: The attachments will be provided in the system by attaching this document here.]

Annex 1 – Useful definitions

END OF LIFE (EOL)		The point in time where the product is no longer able to fulfil the function for which it was designed.
WASTE		Any substance or object which the owner discards or is required to discard. In terms of a synthetic turf sports surface, this is normally when the surface or components reach the end of their life and they are lifted to enable replacement.
RECYCLING		The process of converting end of life (or waste) materials into new materials and products.
MECHANICAL RECYCLING		The process that mechanically converts (cleaning, cutting, grinding, agglomeration, etc) EOL materials into new products.
CHEMICAL RECYCLING		The process in which a polymer is chemically reduced to its original monomer form so that it can eventually be processed (repolymerized) and made into new plastic materials that go on to be new plastic products. This is also known as tertiary recycling.
REUSE		A process whereby a product is turned into a new version of the same product. This process is also known as primary or closed loop recycling.

For further information on REUSE/RECYCLING- see ESTC EOL Guide