



**Umwelt**   
**Bundesamt**

For man and  
environment

**Q & A - online information session**

# **Restriction proposal for Perfluorohexanoic acid (PFHxA) including its salts and related substances**

German Environment Agency (UBA)  
Federal Office for Chemicals (BfC)  
Federal Institute for Risk Assessment (BfR)

## Outline

1. Substances targeted in the restriction
2. Concern
3. Properties and uses
4. Baseline
5. Alternatives
6. Socio-Economic Analysis
7. Proposed exemptions
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## 1. Substances targeted in the restriction

### Perfluorohexanoic acid (PFHxA)

### PFHxA-salts

### PFHxA-related substances

- same perfluorinated carbon chain as PFHxA
- degrade to PFHxA → equal concern
- Shall not be manufactured, used or placed on the market as substances on their own;
- Shall not be used or placed on the market in:
  - (a) another substance, as a constituent, (b) a mixture, (c) an article, in a concentration equal to or above 25 ppb for the sum of PFHxA and its salts or 1 000 ppb for the sum of PFHxA-related substances.
- Shall apply 18 months from entry into force of the restriction.
- Shall not apply to articles placed on the market before 18 months from entry into force of the restriction.

## 2. Concern

### 2.1 Concern persistence and mobility



- PFHxA is **very persistent and mobile** and efficiently distributed throughout the aquatic environment (incl. ground water).
- Due to its persistence **emissions add up** from past, present and future  
→ **Mass balance and environmental concentration of PFHxA increase is likely.**
- It is **difficult to remove PFHxA** from wastewater, drinking water and contaminated sites. Problems with PFHxA exposure already occur today (e.g. contamination of soil in Rastatt, Germany and uptake of PFHxA in plants).

## 2. Concern

### 2.2 Concern long-range transport



- PFHxA is **transported over long distances** and contaminates remote regions.
- Transport of PFHxA occurs into groundwater.
- Already ubiquitously present in the environment.

→ **Can affect humans and the environment far away from its point of emission into the environment and will affect a very large number of people**

## 2. Concern

### 2.3 Concern exposure



- Humans are continuously exposed via environment (e.g. via air, food and drinking water).
- PFHxA is already present in humans (general population).
- Long-term and intergenerational exposure of humans and biota.

**→ Risks to human health and to the environment are not adequately controlled**

### 3. Properties and Uses



- Good properties as water-, oil-, chemicals- and dirt repellent,
- resistant to many chemicals,
- resistant to environmental influences,
- long living materials,
- formation of stabile foams,
- good lubricants.



Kzenon/Fotolia.com



Panthermedia: Mauricio Jordan de Souza Coelho



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<http://www.mirror.co.uk/>  
Foto: Getty



industrieblick/Fotolia.com



Foto: dpa



demarco/Fotolia.com



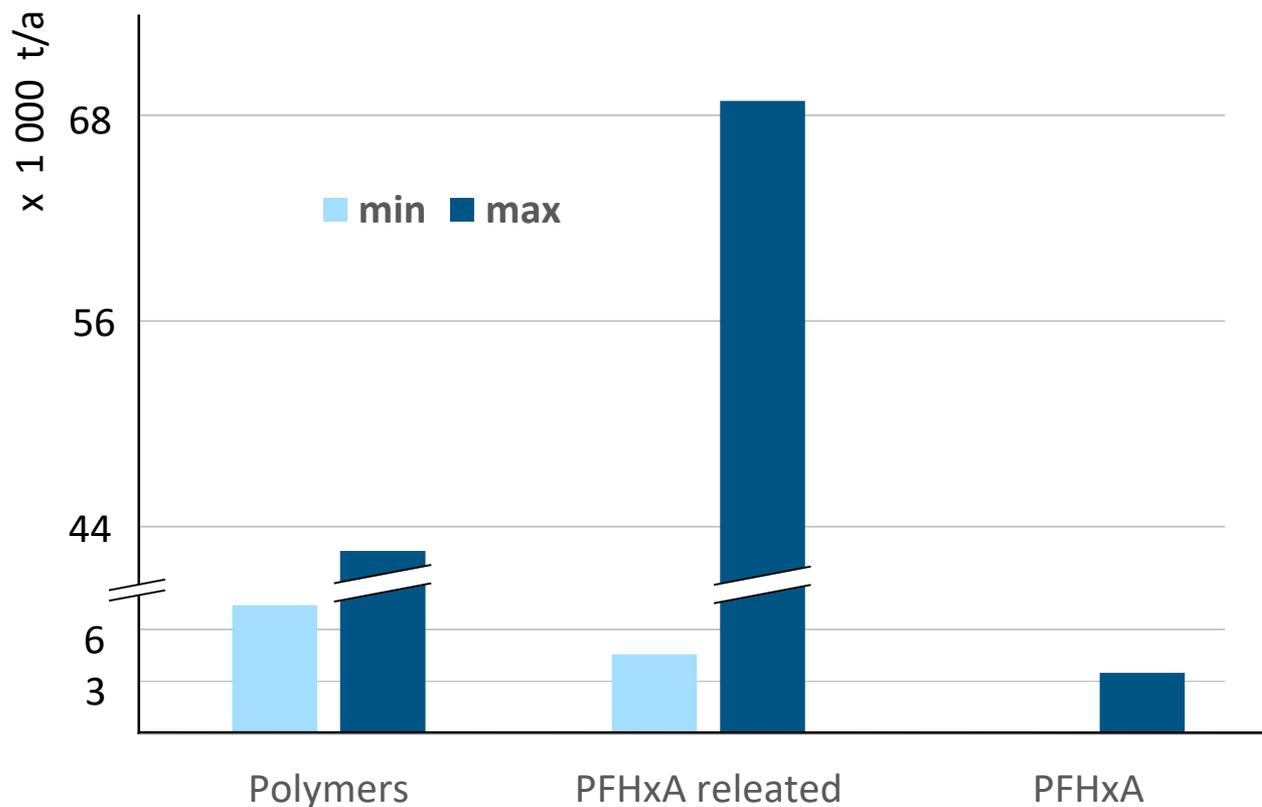
<https://www.pco-group.com>

## 4. Baseline

### 4.1 Use



Current assumed used tonnage (t/a) of fluoropolymers and side-chain fluorinated polymers (SFP), of PFHxA related substances and of PFHxA and its salts (considered as impurity)



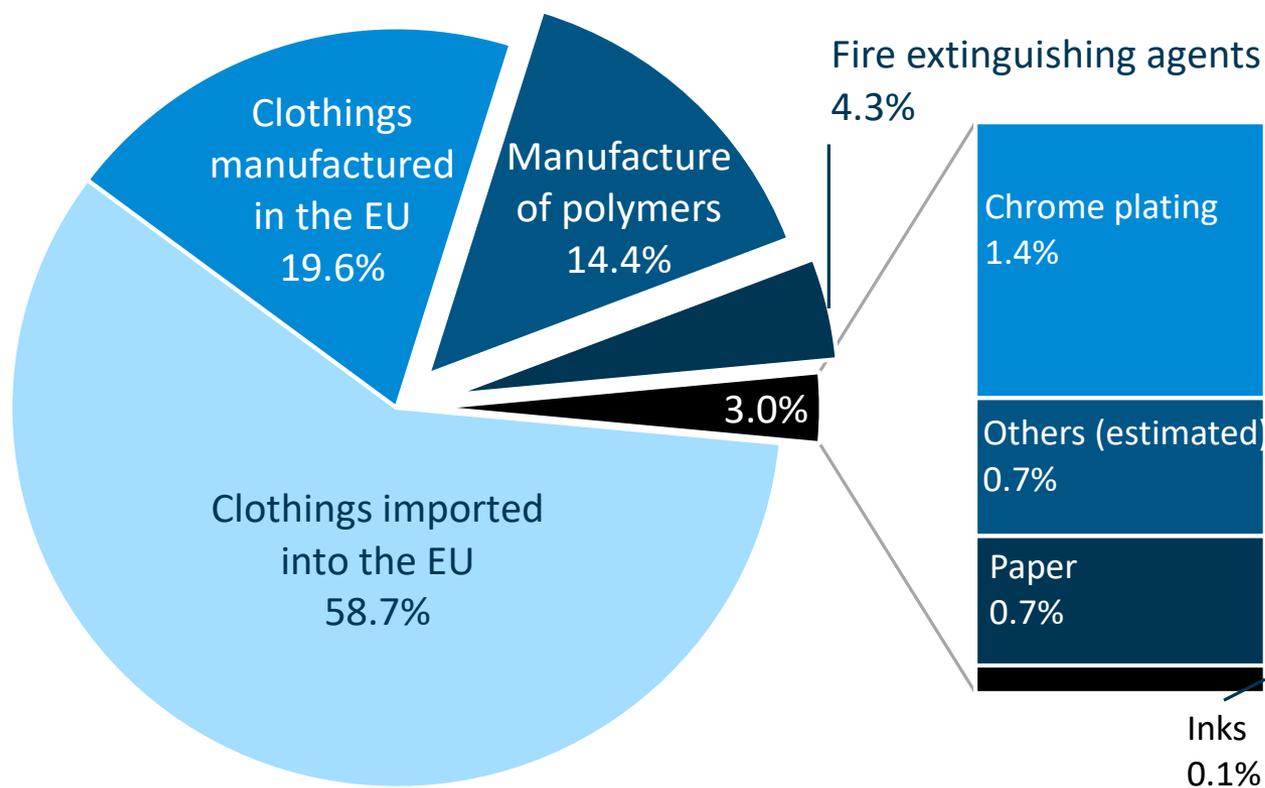
Data were obtained from stakeholder consultation, from several databases and from making assumptions on the basis of available data.

## 4. Baseline

### 4.2 Sectors of use



Current use of PFHxA related substances in products, itemised to the sectors of use

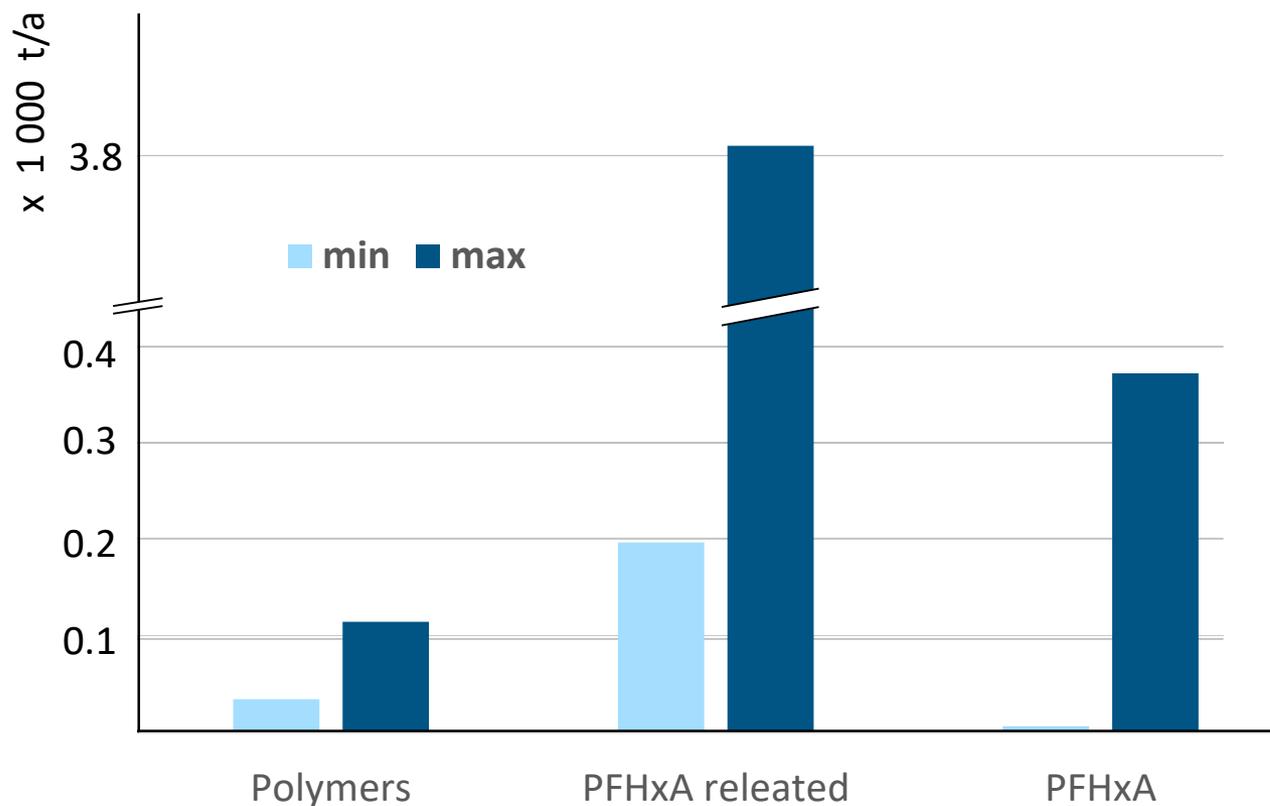


## 4. Baseline

### 4.3 Releases into the environment



Current assumed environmental release (t/a) of fluoropolymers- and side-chain fluorinated polymers (SFP), of PFHxA related substances and of PFHxA and its salts



Data were obtained by calculating with default values from ECHA guidance and from making assumptions on the basis of available data.

## 4. Baseline

### 4.3 Releases into the environment



#### Most relevant environmental release paths:

- Direct environmental releases at fire extinguishing operations,
- open industrial applications (like at chrome plating),
- open applications by professional workers or by consumers (e.g. spray coating of materials),
- due to a relative short life-time, the service life itself of treated textiles or papers is NOT considered as most relevant environmental release path.  
**→ However, the end-of-life stage (e.g. deposit) of these products is one major source of environmental release of PFHxA, its salts and related substances**
- Possible relevant release path: the use of cosmetic and health care products (no sufficient data available).

## 5. Alternatives



- Non-fluorinated **alternatives are available** on the market for most products.
- Most non-fluorinated alternatives are **not more expensive**,

**BUT**

Difficulties in assessment and development of alternatives:

- **Limited information** on manufacturers that are producing/using alternatives,
- **ongoing research** on non-fluorinated alternatives,
- known alternatives partially **less effective** (e.g. dirt and oil resistance),
- alternatives may require **other application methods** and devices.

## 6. Socio-Economic Analysis I



	Affordable switching costs / but functional losses	Significant switching costs but negligible functional losses	Switching costs and/or functional losses very uncertain
Alternatives most likely available	<ul style="list-style-type: none"> <li>Textiles (consumer wear and household)</li> <li>Paper (FCM)</li> <li>Mixtures for consumer use</li> <li>Building materials</li> <li>Cosmetic products</li> </ul>	<ul style="list-style-type: none"> <li>Fire-fighting foam (except defence applications, large storage tanks)</li> <li>Chrome plating (except hard chrome plating)</li> </ul>	
Availability of alternatives uncertain	<ul style="list-style-type: none"> <li>Industrial textile fabrics</li> <li>Printing inks</li> </ul>		<ul style="list-style-type: none"> <li>Manufacture of polymers</li> </ul>
Alternatives expected to be developed		<ul style="list-style-type: none"> <li>Fire-fighting foam (large tanks)</li> </ul>	<ul style="list-style-type: none"> <li>Semiconductors</li> <li>Hard chrome plating</li> <li>Latex printing inks</li> </ul>
No alternatives available	<ul style="list-style-type: none"> <li>Protective occupational wear</li> <li>Non-woven medical textiles</li> </ul>	<ul style="list-style-type: none"> <li>Fire-fighting foam (defence applications)</li> </ul>	

## 6. Socio-Economic Analysis II



- **Economic impacts :**

- Incomplete cost estimates,
- significant costs expected for some uses,
- costs for the replacement of fluorinated polymers largely unknown,
- impacts of functional losses largely unknown.

- **Administrative costs:**

Testing costs for importers; costs partly to be shared with other PFAS-restrictions.  
Reporting requirement for derogated uses.

- **Enforcement costs:**

Enforcement costs are expected to be in line with average enforcement costs of a restriction.

## 6. Socio-Economic Analysis II

(continuation)



- **Health and environmental effects:**
  - No monetized health impacts considered.
  - Emissions reduction estimate over 20 years:
    - > 1 500 t C6-related fluoropolymers and SFPs,
    - > 20 600 t PFHxA-related substances and
    - > 1 450 t PFHxA.
- **Wider economic impacts:**

Are estimated to be of a small magnitude.

## 7. Proposed Exemptions

Derogations are proposed for uses where feasible alternatives are currently not available:

- Without limit of time / with information obligation:
  - AFFF (defence applications), Personal protective equipment, non-woven medical textiles.
- Time limited approval:
  - Hard chrome plating, photographic coatings, AFFF placed on the market, AFFF (storage tanks), semiconductors, latex printing inks.
- Approval for higher thresholds:
  - Fluoro- and SFP-elastomers (automotive and aerospace industries).

## 8. Uncertainties



- Many data gaps as well for **output** figures as for **substance content**,
- difficulties in **analytical proofing**,
- for some uses only **sparse or no data** available (e.g. for cosmetics),
- data for **exports, imports and re-imports** very limited,
- difficulties in **data separation from subgroups** (e. g. separate PPE from total number of textiles),
- limited information on:
  - number of impacted articles in use subgroups,
  - availability of non-fluorinated alternatives,
  - fluorinated alternatives,
  - switching costs,
  - significance and valuation of functional losses.

## 9. Need for restriction - Summary



- PFHxA-related substances are used in large quantities in industrial and in consumer products,
- emissions from multiple uses at each lifecycle step,
- articles containing PFHxA, its salts and related substances are imported into the EU in large quantities,
- at environmental conditions these related substances may degrade to PFHxA,
- **concern for PFHxA (very persistent and mobile, difficult to remove from environmental compartments, emissions add up continuously, intergenerational exposure of humans and biota),**
- alternatives are available for most uses.

**baua:**  
Bundesanstalt für Arbeitsschutz  
und Arbeitsmedizin

 **BfR**  
Bundesinstitut für Risikobewertung

**Umwelt**   
**Bundesamt**

**Thank you for your attention!**