



AFBW

Allianz Faserbasierte Werkstoffe
Baden-Württemberg e.V.

PFAS restrictions and their consequences for EU textile manufacturers

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VTB – Verband der Bayerischen Textil- und
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AFBW – Allianz Faserbasierte Werkstoffe Baden-
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The German Textile Industry:

A “jack of all trades” in highly complex supply chains and highly complex products



- The "REACH indicator industry" among the downstream user industries
- Multiple REACH precedent industry
- The cross-sectional industry among the post-user industries
- In 2018, the VTB/SWT/AFBW was appointed to the REACH Advisory Group of the German Federal Ministry of Economics and Technology (BMWFi) or was a permanent reporting member of the committee (currently this circle in the BMWK has unfortunately been shut down for the time being)

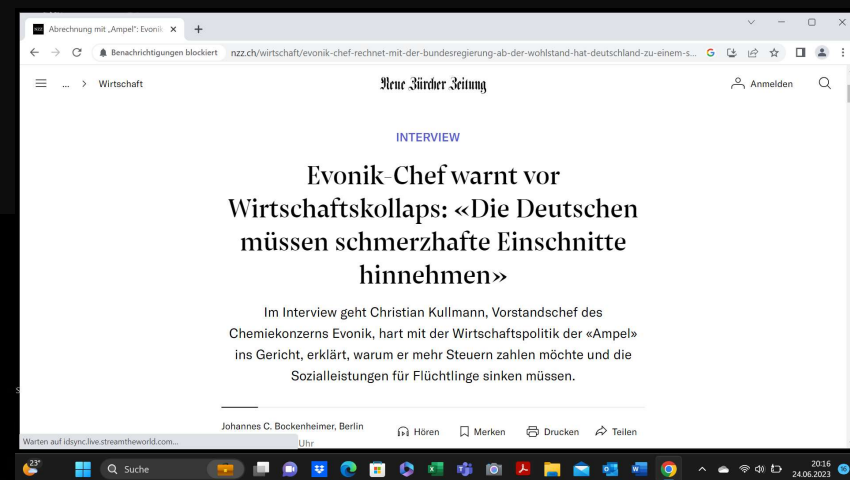
A prediction made by the textile experts in 2016 that can no longer be dismissed by 2023 at the latest:
The current headlines around PFAS, Energy & Co.

<https://www.welt.de/wirtschaft/article245011950/PFAS-Verbot-Maschinenbau-und-Chemie-in-existenzieller-Gefahr.html>

<https://www.handelsblatt.com/unternehmen/industrie/pfas-debatte-industrie-warnt-vor-verbot-von-ewigkeitschemikalien/29166350.html>

<https://www.devicemed.de/pfas-verbot-medizintechnik-verbaende-schlagen-alarm-a-583a37936aeea8b195baef9ec40eb482/>

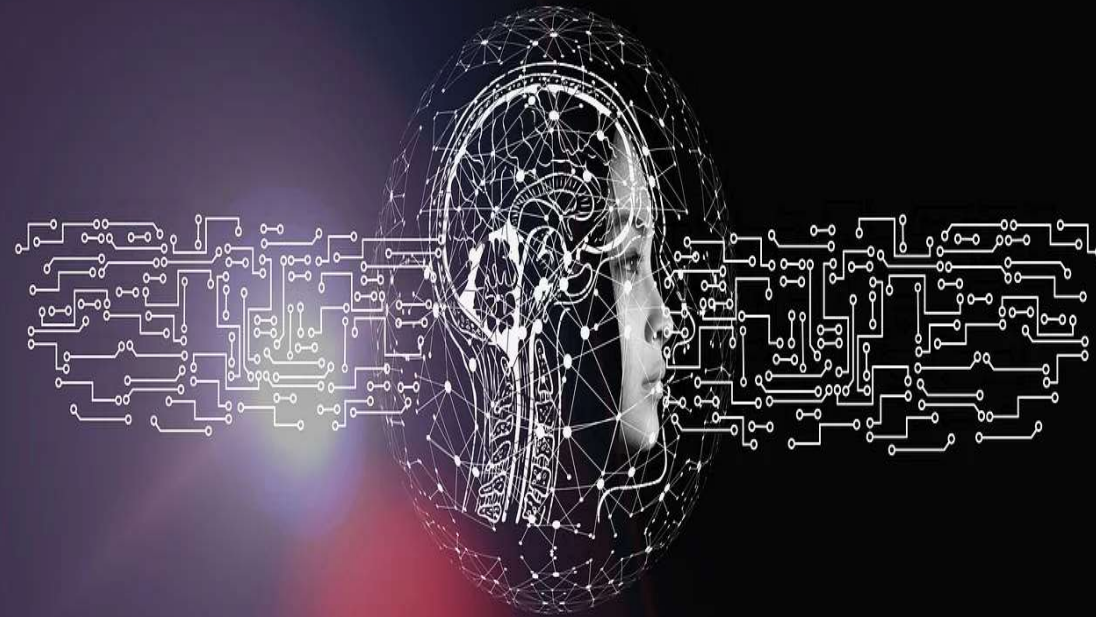
<https://healthcare-in-europe.com/de/news/pfas-verbot-gefahr-gesundheitsversorgung.html>



REACH, BPR, CLP & Co. and an basic problem

The often enormous complexity of the products, the highly-fragmented division of labor in the global supply chains, the effect of the different regulations, or their cumulative effects, etc., cannot be reasonably mapped and regulated with a **linear approach**.

The result is unreasonable regulation of chemicals and the risk of multiple, sometimes very fatal, adverse effects. Collateral damage. With even more complex REACH substance group restrictions, there are these collateral damages therefore de facto preprogrammed or exponentially increasing.



A short introduction to “Linear” vs. “Complex”

The REACH-PFAS restriction and textile PFAS membrane systems according to “Outdoor jacket functional principle”



Textile protection from the elements:

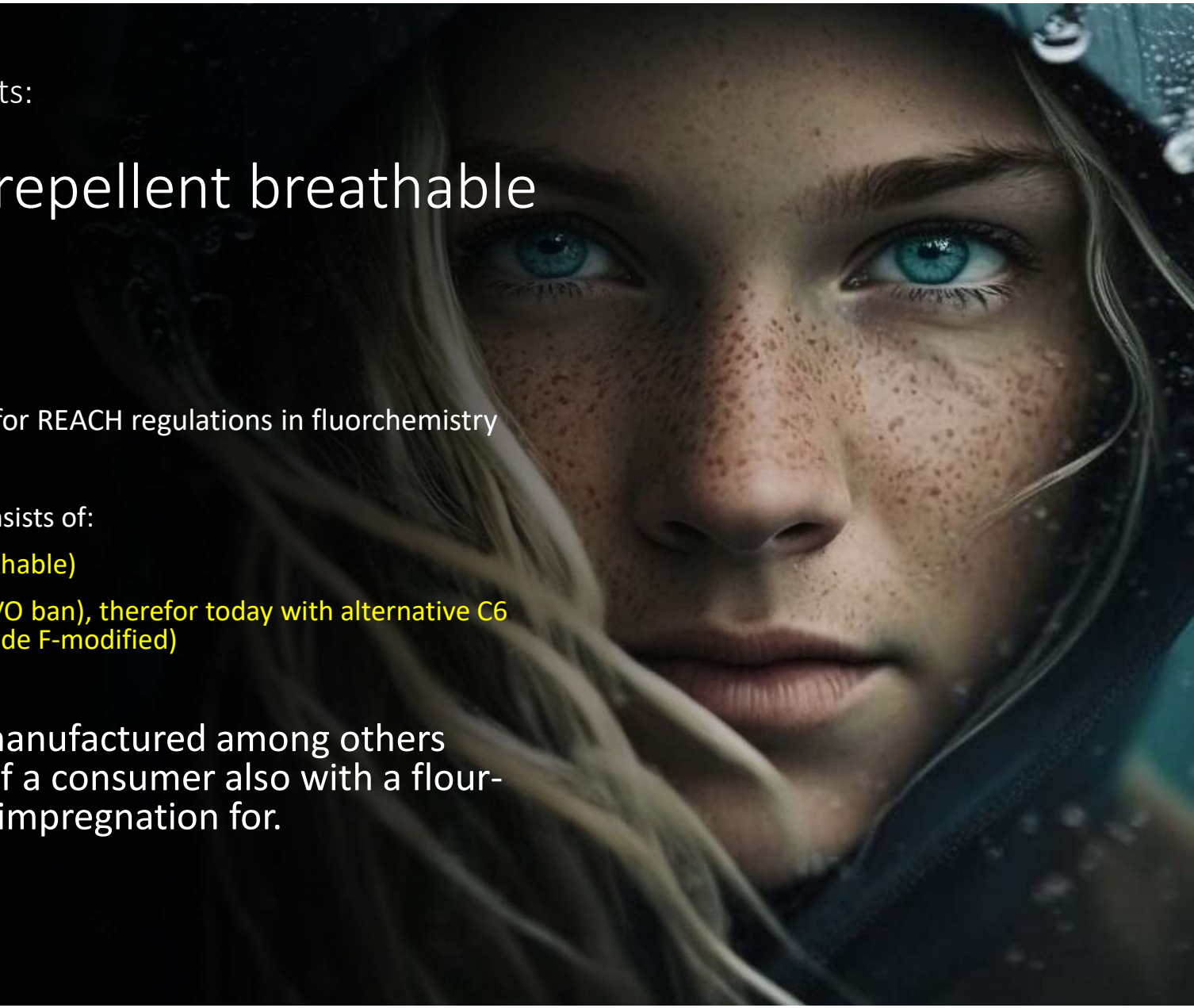
The water and dirt repellent breathable outdoor jacket!

The Outdoor jacket, one of the symbols for REACH regulations in fluorchemistry

The fluorine-containing “corpus delicti” consists of:

- E-PTFE membrane (air permeable/breathable)
- Water-repellent C8 impregnation (POP-VO ban), therefor today with alternative C6 impregnation of fluorinated polymers (side F-modified)

These outdoor jackets can be manufactured among others alternatively for everyday use of a consumer also with a flour-free membrane + fluorine-free impregnation for.



Impending REACH bans for for impregnation with PFOA alternatives, as well as "PFAS-free" alternatives on outdoor jackets

- PFAS-containing: C6 chemistry the alternative substance to C8/PFOA once proposed by ECHA is now itself subject to the REACH PFHxA restriction. PFHxA is only produced in traces during the production of fluorinated C6 polymers (around 1 ppm).
The PFHxA restriction is the "F-persistence" precedent case to the REACH-PFAS mass regulation. Both restrictions now also run parallel to each other/into each other (?) !
- "Pile-free":
 - 1.) Hydrophobically modified silicones (D4-D6 siloxanes , linear siloxanes as SVHC's. -)
 - 2.) Hydrophobically modified melamines (REACH formaldehyde restrictions, Reach melamine restrictions)
 - 3.) Hydrohobically Modified Isocyanates (REACH Occupational Safety and Health....)
 - 4.) Blocked isocyanates for fiber bonding (notified REACH bans...)
 - 5.) etc.

Textile PFAS protection from fire, heat and fuels & Co.

Firefighters' protective clothing of category III according to EU PPE regulation.

“Outdoor jacket construction”:

E-PTFE membrane (heat damming, flame retardant, chemical resistant...) + C6 impregnation (fuel or chemical repellent)+ flame retardant aramid fiber fabric

(EU aramid fiber production will probably be banned soon via REACH regulation, since aramid fibers are spun from DMAc. In the USA, aramid fiber production is under special protection of the state).





Decades of high security protection

Textile PFAS protection for control electronics

E-PTFE membrane (air pressure compensating) + C6 impregnation for liquid repulsion of any surface tension+. Textile durable for decades (made of PTFE fibers, among others)

Current: No exemption in PFAS regulation.

Bild-Nachweis: (Erlaubnis eingeholt beim Hersteller)



Textile PFAS environmental protection

Hot gas exhaust filter for waste incinerator & Co.

- E-PTFE membranes for hot gas filtration (resistant to continuous temperatures, extremely aggressive, acidic exhaust gases, etc.)
- Textile carrier a.o. PTFE fiber fabric
- Optionally C6 impregnated

In the PFAS restriction currently no exception provided.



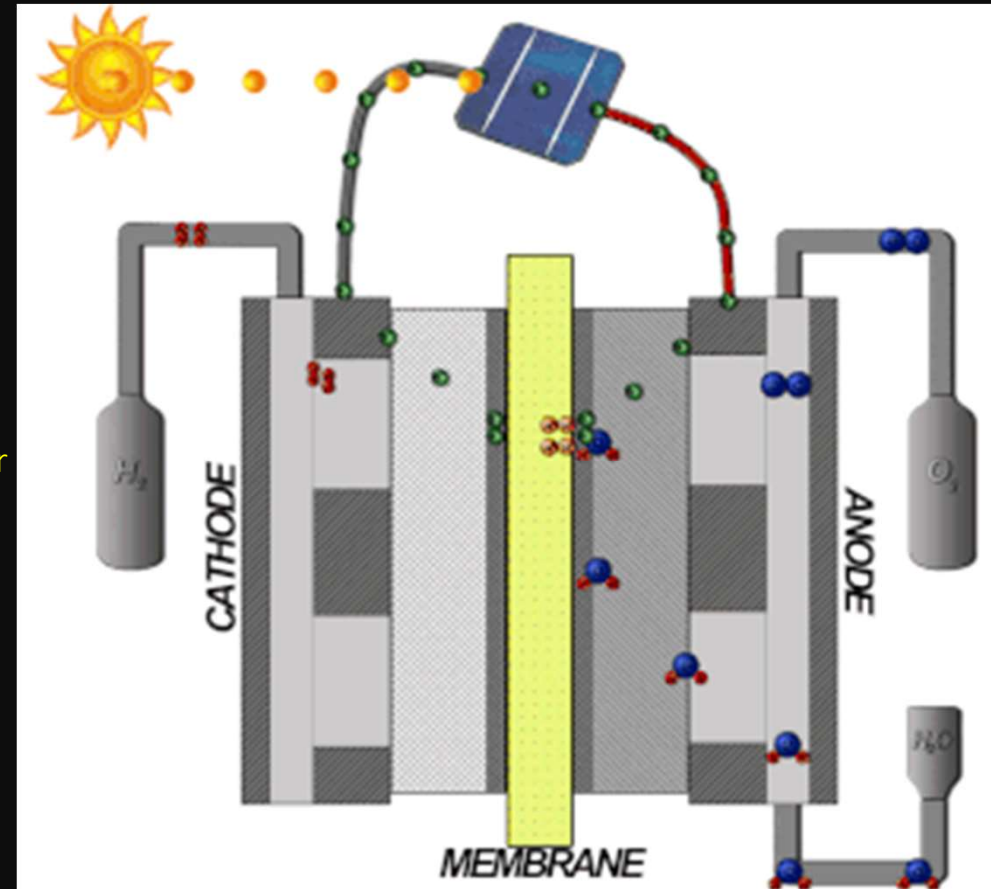
Highly efficient hydrogen production

The textile PFAS hydrogen electrolyzer

Proton exchange membrane
(Fluorinated in polymer main chain and polymer side chains)
+
C6 Impregnation
+
on conductive carbon fiber knitted fabric (announced REACH fiber restrictions threaten here as well)

PFHxA restriction – still no exception

PFAS restriction – provided as exception



Life-saving but in the complex EU prohibition environment

Knitted PFAS pediatric stents on chromium-cobalt support.

MDR product category III

EU legal prohibition cascade:

- De facto ban on pediatric stents over high approval costs of new EU medical device regulation (MDR)
 - Exception in PFAS regulation (PTFE membrane)
 - Impending ban via REACH Skin-Sensitizer regulation (the alloyed cobalt in the stent is classified H 317 under CLP).
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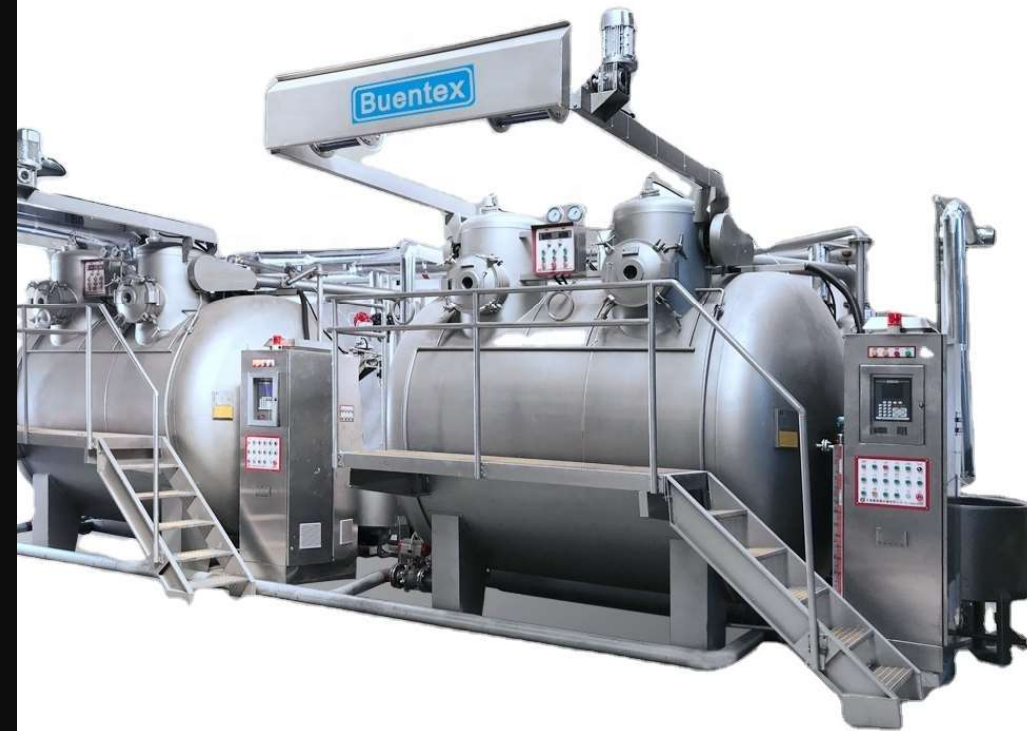
Oh, one more thing ...

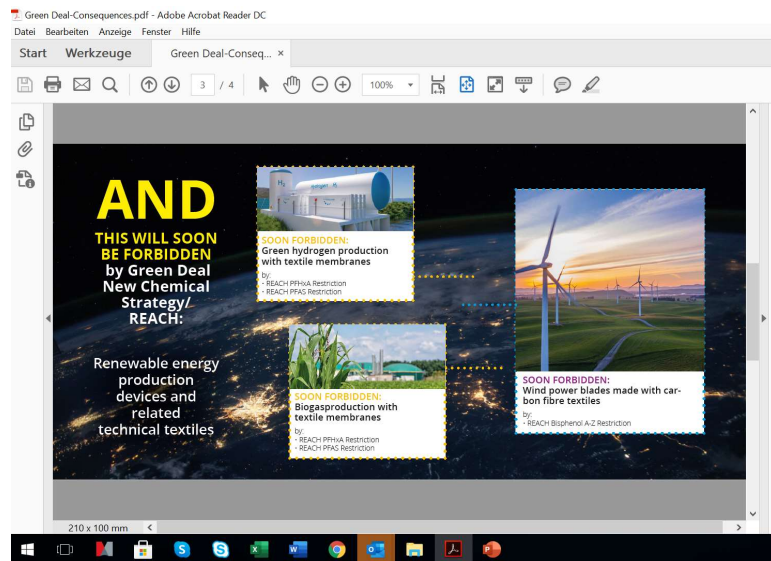
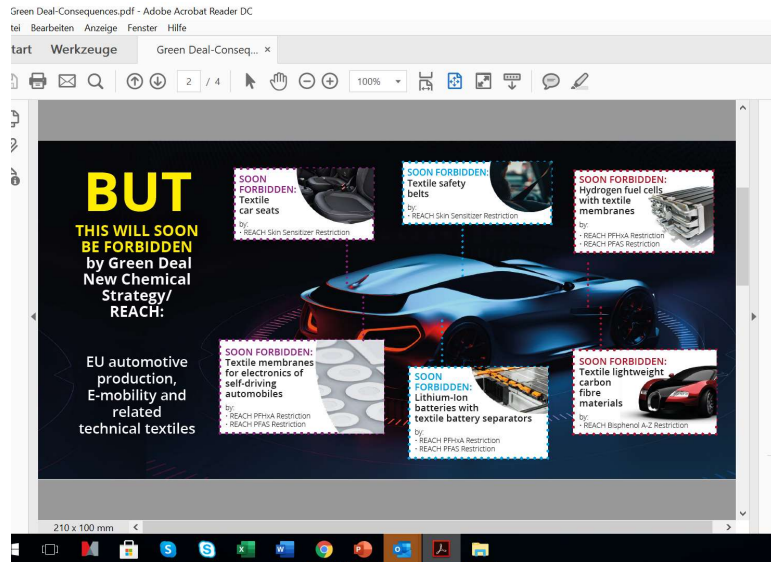
Our textile machines are
also placed under ban
due to “PFAS”

Our textile dyeing machines built by medium sized machine builders for medium sized textile finishers, fail at sight according to the proposals of the PFAS – restriction both in new purchase and in operation (Maintenance!).

For the seals used in the dyeing machines, some of which are made of quite different fluoropolymers, no exceptions are to apply in either the PFHxA or the PFAS restriction.

This REACH-PFAS regulation is
consequently also a process ban
or textile finishing in Europe.





VTB communication flyer from 2021 on the fatal effects of REACH substance group restrictions according to REACH revision scheme.

Green Deal – Yes we can, but ...

PFHxA-REACH restrictions
"Fünf vor 12 flyer" of the German
textile associations.



To date no indications of serious human health risks are documented. Human exposure to PFHxA is limited and the studies available suggest a considerable gap between effect levels and measured exposure levels and **the current state of research suggests that human exposure to PFHxA is unlikely to increase to levels that cause risks to the human health.** But since PFHxA is extremely persistent and the releases are not reversible the magnitude of future exposure cannot be predicted conclusively. The extreme persistence means that the exposure via environment is intergenerational, and inevitably increasing, in case the releases are not minimised. **It may thus be possible that serious health concerns related to PFHxA-exposure may be documented in the future.** It is important that releases are reduced to a minimum and possible future uses of the substances are prevented.

Considering the absence of clear evidence regarding human health impacts from exposure to PFHxA, the Dossier Submitter concludes that there are currently no impacts to be expected. However, with a rising environmental concentration of PFHxA this may change in the future."

Paracelsus for beginners:

Another one of those eternity chemicals ...

If the PFHxA or PFAS regulatory criterion of "persistence" is taken as a basis, one would have to ban a very essential, eternal chemical in the EU as a matter of priority.

- Is **persistent** or does not degrade for billions of years
- **Ubiquitous**, long-distance transport via water and air to all corners of the earth, such as the Arctic, Himalayan deep sea to probably the center of the earth or is also found in every living being
- **Water-soluble**, therefore highly mobile and relevant to wastewater
- Promotes **high blood pressure**
- **Toxic** especially also for the aquatic freshwater environment
- **Drinking** water contaminated with this substance (e.g. North Atlantic) **always ends fatally** for humans after only a few liters

The substance is already **in the environment with 40,000,000,000,000 tons** and is of anthropogenic as well as natural origin

SALT (NaCl)



Leading means being responsible for people and the environment
act and above all know the way....

For a good future for the next generations

Textile is always part of the solution:

Example:

Use of textile PFAS filters for immission prevention

(research activation in 2018 in the AFBW event “Faser und Filtration”)

These textile solutions, developed by medium-sized companies, exist on the market today in 2023

Acute measures:

- **Immediate moratorium on REACH, BPR, CLP & Co., as all original targets are counteracted**
- **Preservation/Saving of German and European production/sites, technologies, pools of experts and specialists**
- **Saving the world's leading PFAS recycling technologies at the Gendorf site**
- **Preservation of all European fluorochemical sites as a key to Europe's independence or production capability, innovation capability, high-tech capability and – above all – to be able to catch up with AI (logic chip production, etc.) again.**
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Thank you for your attention!

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Image sources: Pixxabay, BR, VTB/SWT/AFBW Member companies