

NICOLE HUEHN, GOTHENBURG, 7 FEBRUARY 2023

The journey to develop and promote an alternative to PFAS

SYMPATEX JOURNEY

OVERVIEW

01

WHO'S SYMPATEX?

02

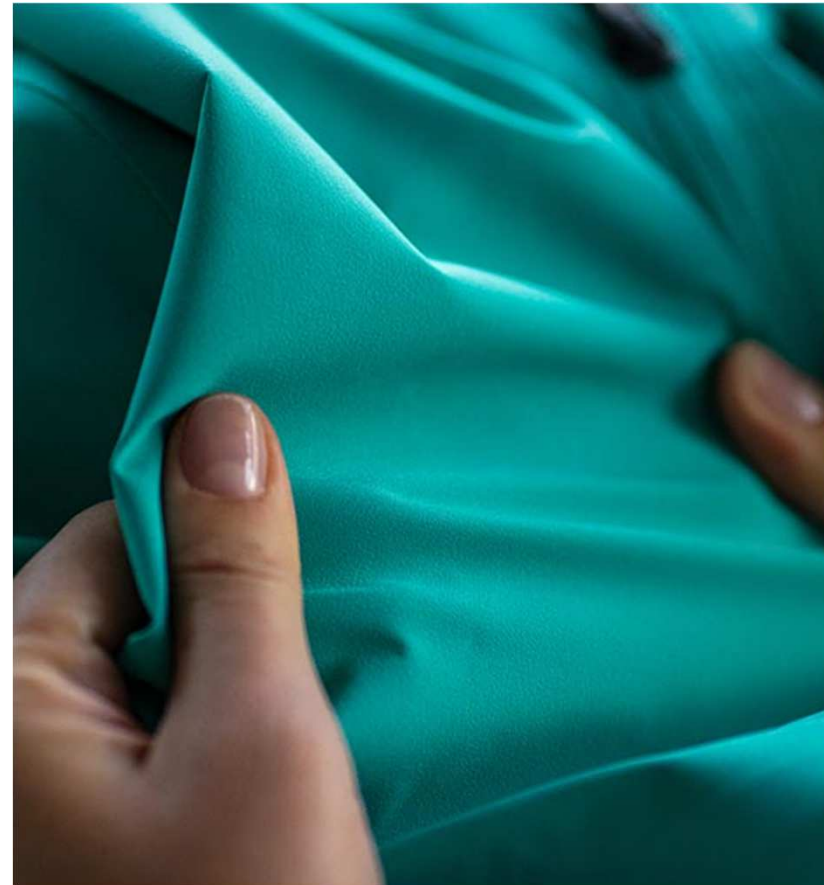
PFAS IN FUNCTIONAL FABRICS & SHOES

03

PFAS PHASE-OUT SYMPATEX JOURNEY

04

PPE – LET'S LOOK CLOSELY



BACKGROUND INFO

WHO'S SYMPATEX?



PES-membrane +
laminates



Outdoor, corporate &
work wear



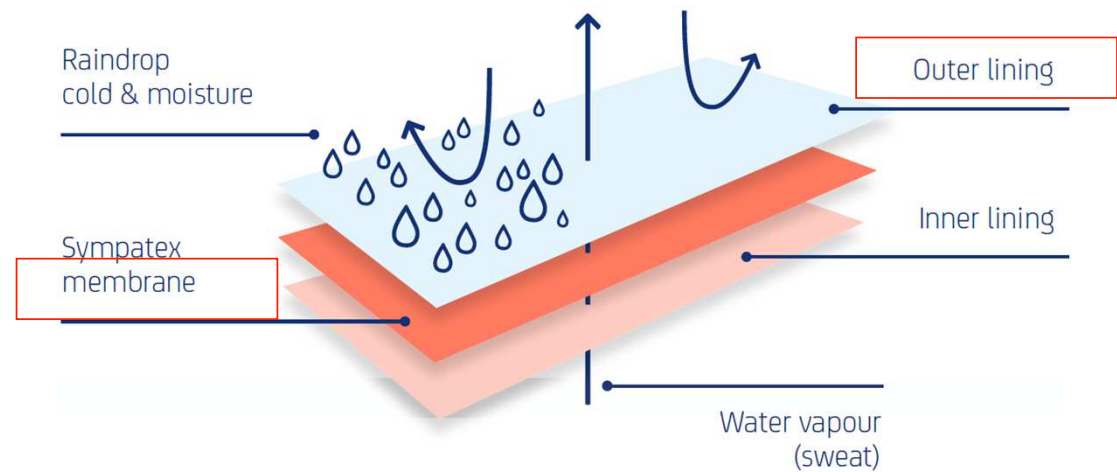
Footwear



company goal:
re>close the loop

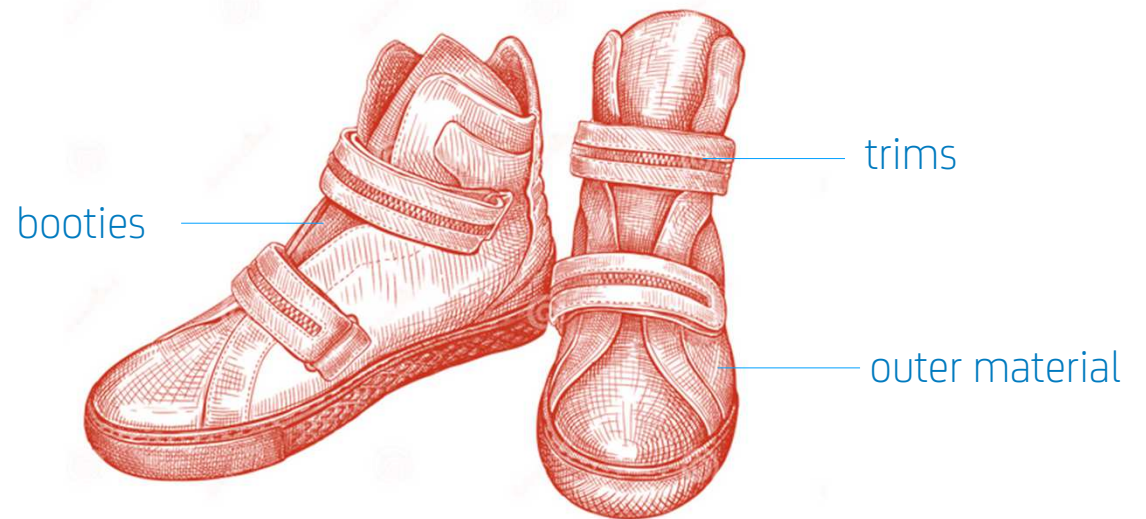
Potential PFAS in functional fabrics

- Outer lining (water repellent):
→ fluorine DWR
- Membrane (waterproof):
→ PTFE



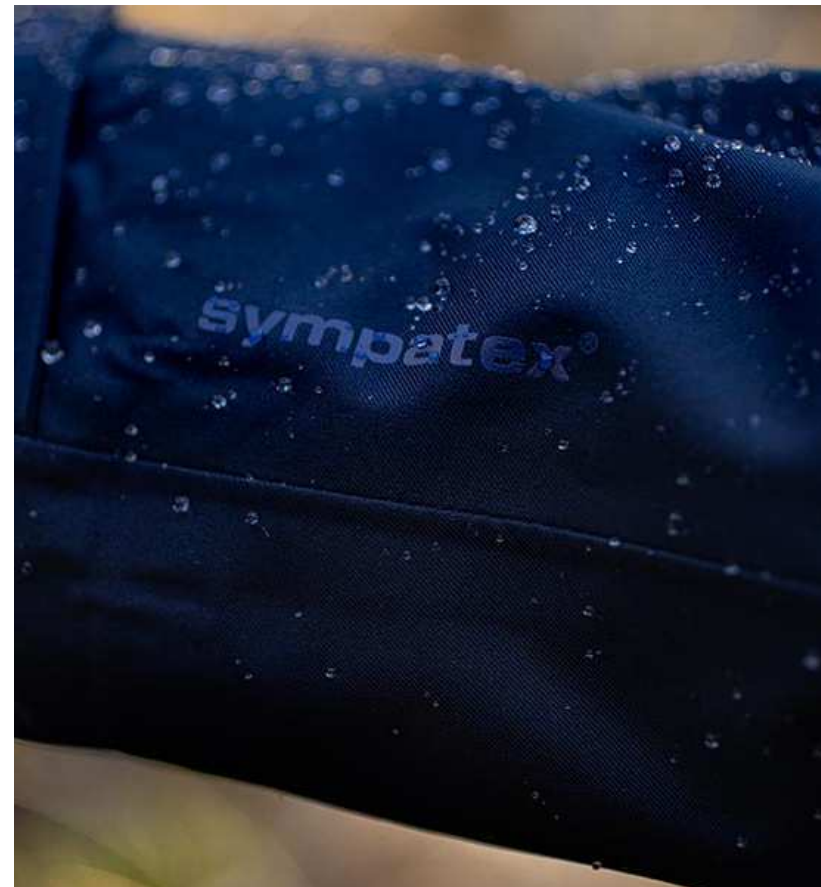
Potential PFAS in waterproof shoes

- Outer lining: fluorine DWR
- Bootie membrane: PTFE
- Trims: fluorine DWR



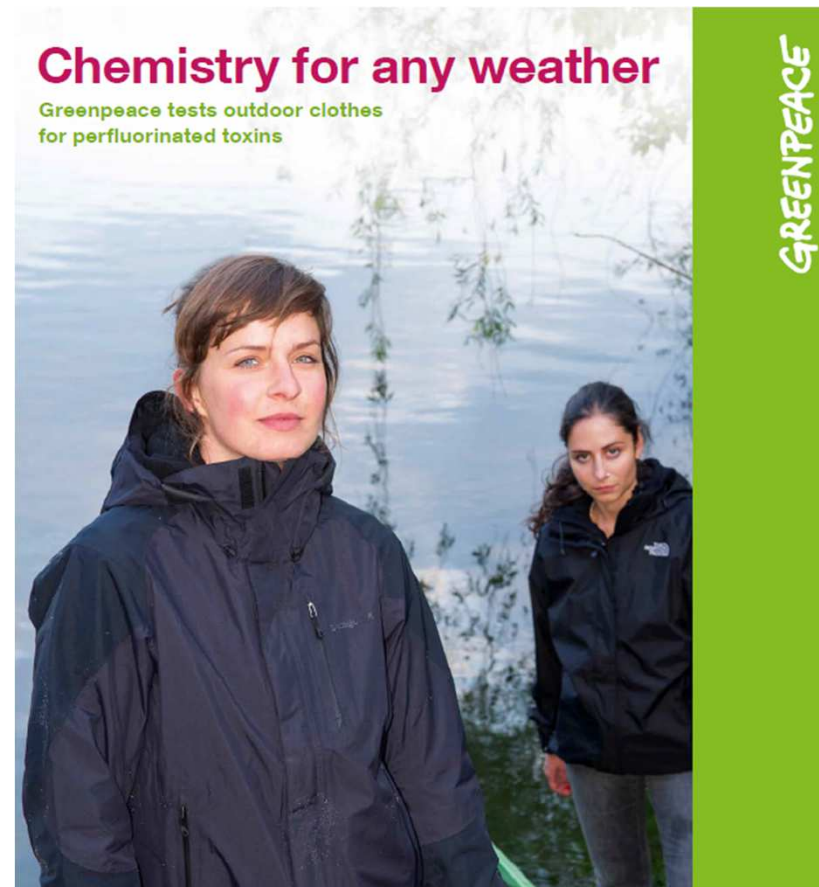
Start 2008: 1st fluorine-free DWR to market

- **Not accepted by customers-** less water repellent performance; no oil repellence
- **STX** gaining experiences & knowledge reg. contaminations, colours etc.



2012: Greenpeace Detox campaign

- Awareness outdoor industry
- **STX** fabrics lowest PFAS detected
 - Presentations & consultations
 - More customers requests
- Increase fluorine-free products
- Series tests with different CO DWR



2017 – turning point

- Sympatex was almost PFAS-free (except PPE and customer's requests)!
- PTFE manufacturer's claim to be environmental friendly because of fluorine DWR phase-out until 2022

→ Enlightenment mission



Sympatex action and findings

PTFE membranes/ laminates

- 30x higher CO₂ level
- 2x higher water consumption
- Not recyclable
- Harmful to health and environment



STX PFAS TOUR

- 2017 – Injunction competitor – won ✓
- 2017 – publication of CO₂ level of PTFE
- 2018/19 – combustion tests of membranes
- 2020 – independent study on CO₂ values
- 2021 – STX report ‘PTFE in textiles not-essential’
- 2021 – discussions with authorities
- 2021 – PFAS consultation
- 2021 – ChemSec PFAS Movement
- 2022 – new discussions with sfera
- 2022 – STX PPE portfolio fluorine-free
- 2022 – thesis about PFAS in textile PPE
- 2023 – PFAS position paper to MEPs
- 2023 – PPE supplement to ECHA

PPE – many different applications

- E.g. OekoTex (Ecotextile):



- OekoTex Mail 25 January 2023:
“This limit value is not applied to PPE and materials for the production of PPEs.”

→ PPE application fields differ a lot – let us look closely!

PPE - ONLY SOME EXCEPTIONS ESSENTIAL

PPE PFAS study

- Overview of:
 - **non**-PFAS-relevant requirements that can be placed on protective clothing (11)
 - **substitutable** PFAS-relevant requirements imposed on protective clothing (15)
 - **critical** PFAS-relevant requirements for protective clothing that **need to be subject to closer scrutiny** (9)

Requirements	Standards	Component	PFAS relevance
Tensile strength	ISO 1421	Membran/ Laminat	Low influence
		DWR	differences, but soluble
Tear strength	ISO 4674-1	Membran/ Laminat	Low influence
		DWR	differences, but soluble
Abrasion resistance	ISO 12947	Laminat's face fabric	Possibly, depending on thickness of DWR
Delamination	ISO 6330	Laminate	No significant difference but different demands on adhesive in laminat

Extract from Bachelor Thesis of Elisabeth Finger/ Sympatex, Fluorine-free alternatives in protective workwear, 2023

PPE requirements: Flex cracking test -20°C

- Body heat penetrates through the garment to the outside, so the material does not get as cold as the outside temperature (studies available)
 - Wearer might get too cold, if laminate reaches -20°C. Study with shoes show that test person broke off because it could no longer wear the shoe - 6 °C outside at -20 °C in the climate chamber
 - E.g. Germany rarely has extreme temperatures of - 20°C (weather statistics)
- For critical requirements: court case (C-389/19 P) regarding alternatives and functionality: alternatives do not have to give the same functionality/performance as the chemical it is replacing

Thank you.

Sympatex Technologies GmbH
FeringasträÙe 7a
D-85774 Unterföhring

Tel.: +49 (0) 89 9400 58-0
Fax: +49 (0) 89 9400 58-297
info@sympatex.com

sympatex®