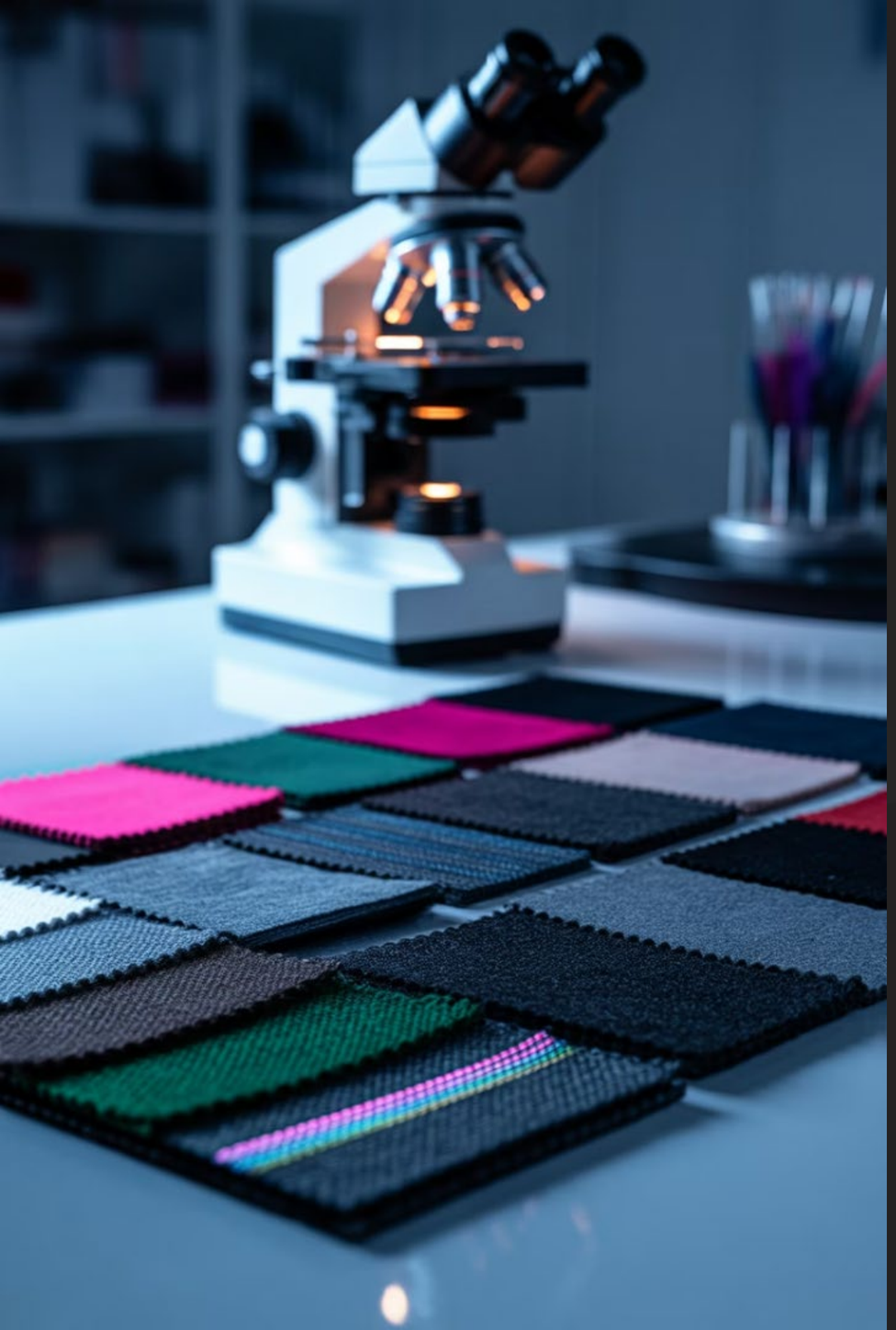
PFAS in Textiles: Understanding prEN 17681:2023

A comprehensive analysis of the new European standard for PFAS testing in textiles. This presentation examines detection challenges, contamination sources, and regulatory implications for the textile industry .



Introduction to PFAS in Textiles

New Standard

prEN 17681:2023 published in late 2023 for PFAS detection in textiles

Surprising Findings

Widespread PFAS detection in textiles not marketed as water-repellent

Regulatory Concerns

Legal limits exceeded in some materials, prompting industry investigation

Implementation Timeline

Standard expected to take effect Q4 2024 or Q1 2025

Detection Method Comparison

Current Standard (EN 17681:2022)

Lower detection capability for PFAS compounds

Still used in many industry Restricted Substance Lists (RSLs)

Primarily targets direct PFAS applications

New Standard (prEN 17681:2023)

Significantly higher detection rates

Identifies crosslinked PFAS compounds

Detects fluorotelomer alcohols (FTOHs) effectively

Study Findings

Widespread Detection

PFAS found in materials not explicitly labeled as water-repellent

Critical Materials

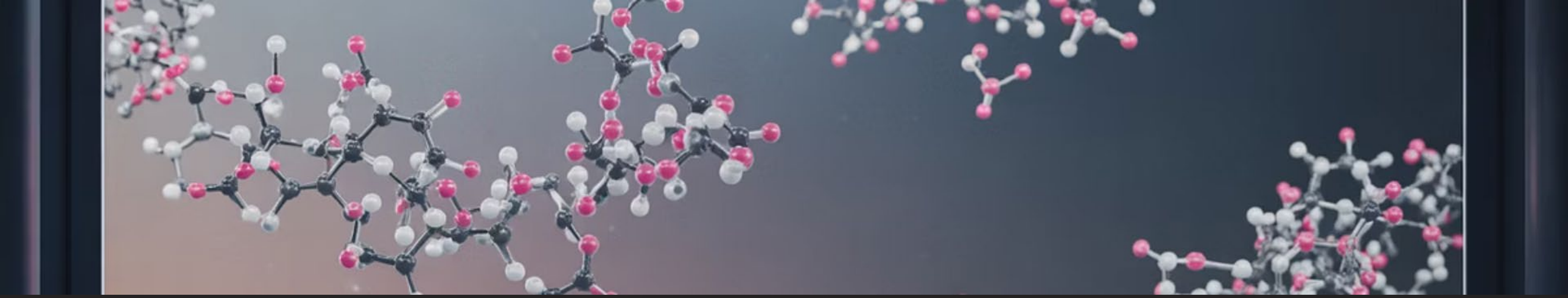
Paper materials (insoles) and recycled yarns showed highest contamination

Industry-Wide Issue

All manufacturers had models failing legal requirements under new testing

Testing Initiative

Deichmann partnering with DRRR for standardized proficiency testing



Specific PFAS Compounds Detected

6:2 FTOH

Fluorotelomer alcohol with 6 perfluorinated carbon atoms

Common replacement for C8 chemistry

Subject to upcoming EU restrictions

8:2 FTOH

Eight perfluorinated carbon atoms in structure

Higher persistence in environment

Detected in numerous textile samples

10:2 FTOH

Longer-chain fluorotelomer alcohol

Significant bioaccumulation potential

Found in several tested materials

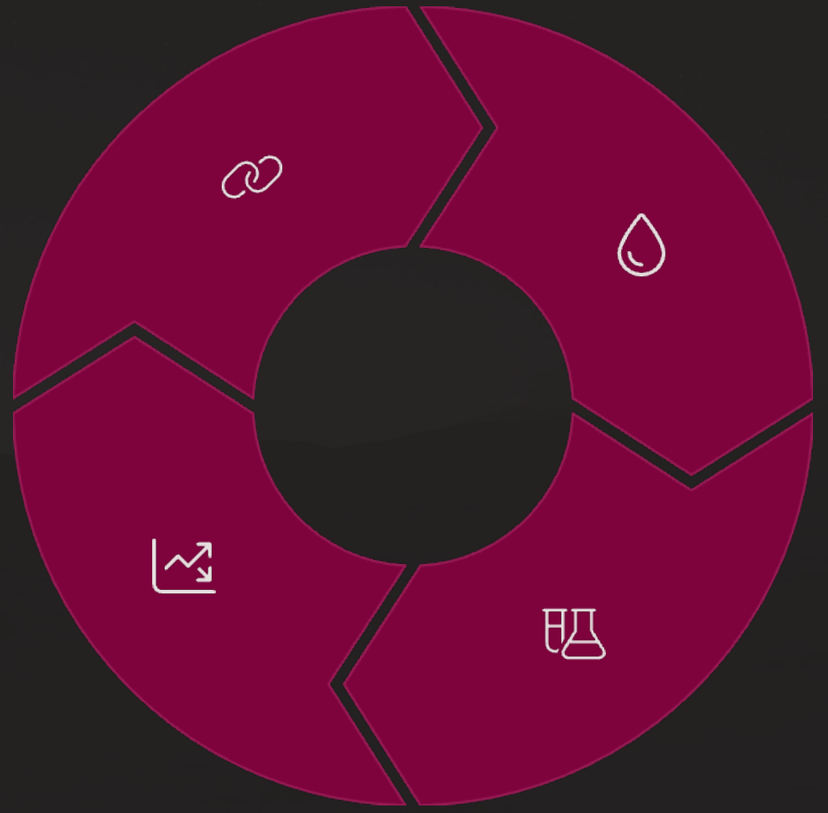
Chemical Structure and Detection

Crosslinkers

PFAS units often linked to fibers via crosslinker molecules

Extraction

New method effectively attacks these crosslinked bonds



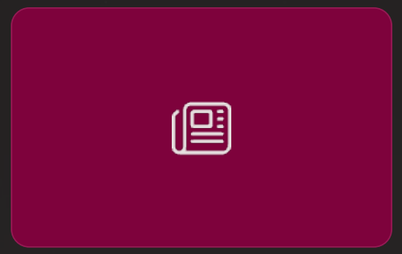
Quantification

Precise measurement of previously hidden PFAS content

Analysis

Released PFAS units generate high detection values

Paper Materials and Recycled Content

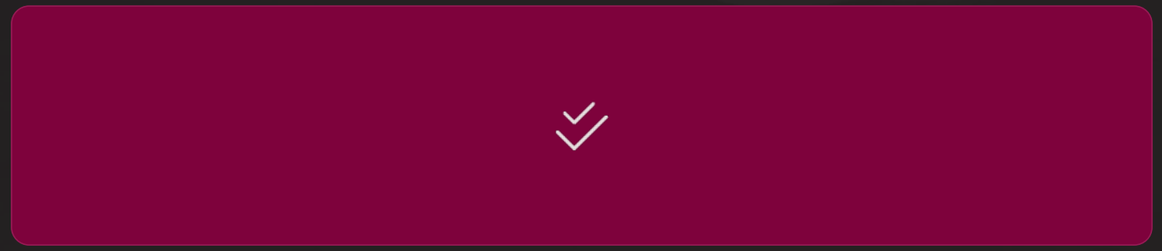


Recycled Paper

Primary source of PFAS contamination in insoles

Recycled Yarns

Contain PFAS from previous applications

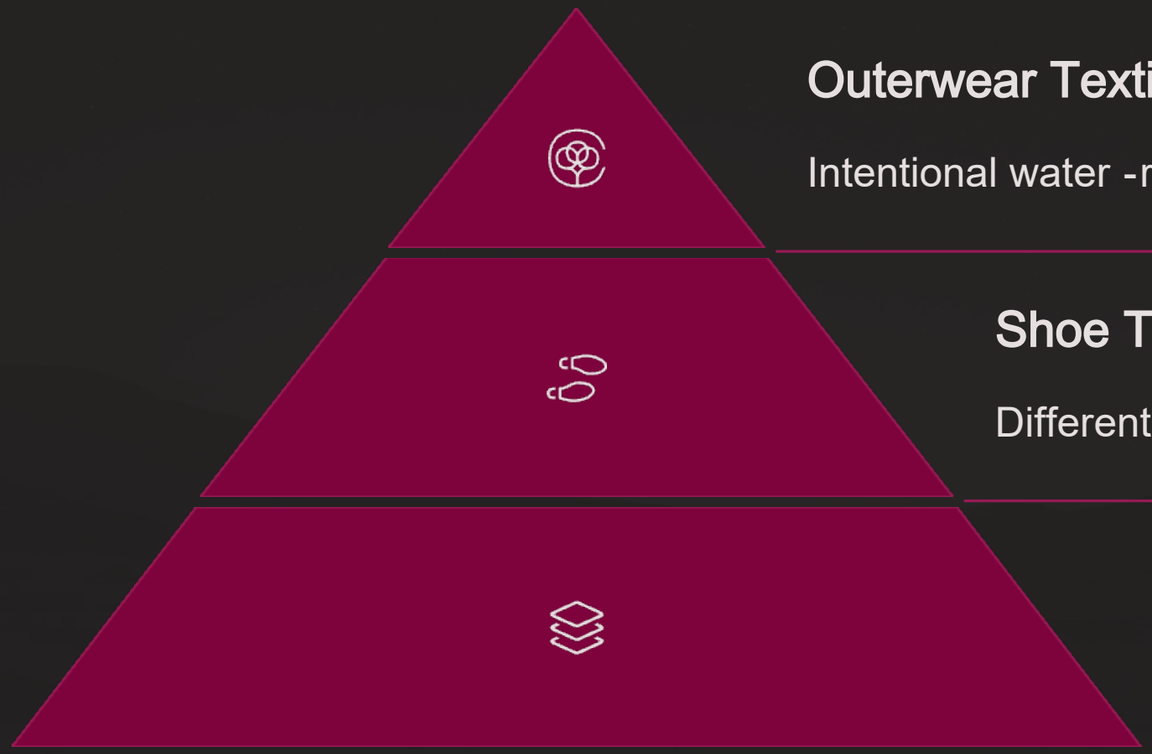


Testing Challenges

PAPs in paper not covered by current standards

Polyfluorinated alkyl phosphates (PAPs) frequently occur in paper products. These compounds represent a significant unaddressed testing gap.

PFAS in Different Textile Applications



Outerwear Textiles

Intentional water -repellent treatment

Shoe Textiles

Different structure and functional requirements

Carrier Materials

Potential unintended contamination sources

The working group emphasized that outerwear and shoe textiles have fundamentally different structures. These differences affect both PFAS application patterns and detection results.

Regulatory Implementation

Current Status

State offices implementing PFAS methods based on prEN 17681:2023

Implementation Timeline

Standard expected to take effect Q4 2024 or Q1 2025

Final Form

Only minor editorial changes expected before publication

Enforcement

Regulatory bodies preparing for stricter compliance monitoring

EU Restrictions on PFAS C6 Chemistry

Direct Restriction

EU Member States have imposed restrictions on PFAS C6 chemistry

Specifically targets PFHxA and 6:2 FTOH compounds

Voting Timeline

Final votes scheduled for June 2024

Political timing may delay implementation until after elections

Industry Response

Substances already regulated in CADS Restricted Substance List

Manufacturers adapting compliance strategies

Legal Interpretation Challenges

FTOH Legal Status

Working group debating whether FTOHs fall under legal requirements

Legal Clarification

Separate appointment with lawyer to be scheduled

Membership Presentation

Findings may be presented at members' meeting in Graz

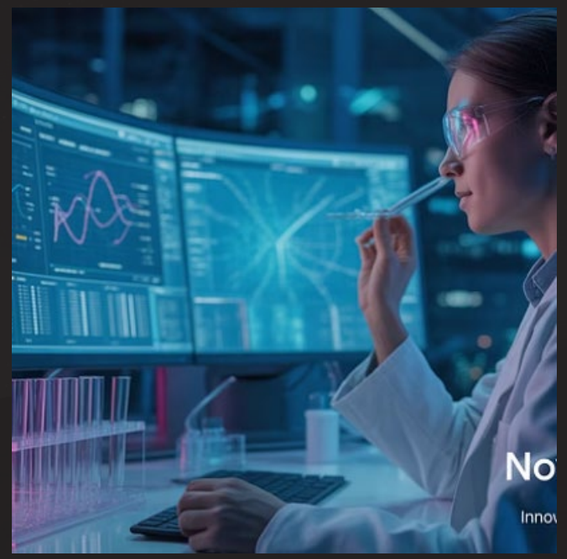
CADS RSL Updates

12:2 FTOH to be added to restricted substances list

Industry RSL Comparison

RSL Standard	Testing Method	PFAS Approach
AFIRM	EN 17681:2022	Test only if contamination suspected
AFIRM (Note)	prEN 17681:2023	Warning about increased FTOH values
CADS	Both methods	C6 chemistry already restricted
State Agencies	prEN 17681:2023	Implementing for compliance testing

Testing Recommendations



Comprehensive testing strategies should include both standard methods. Special attention should focus on recycled materials and paper components.

Next Steps and Recommendations

100%

Material Screening

Test all materials using both current and new standards

2025

Implementation

Prepare for full enforcement of prEN 17681:2023

12:2

FTOH Addition

Include 12:2 FTOH in restricted substance monitoring

3X

Detection Sensitivity

Expect approximately triple detection rates with new method