



Toxic Convenience:

The hidden costs of forever
chemicals in stain- and
water-resistant products

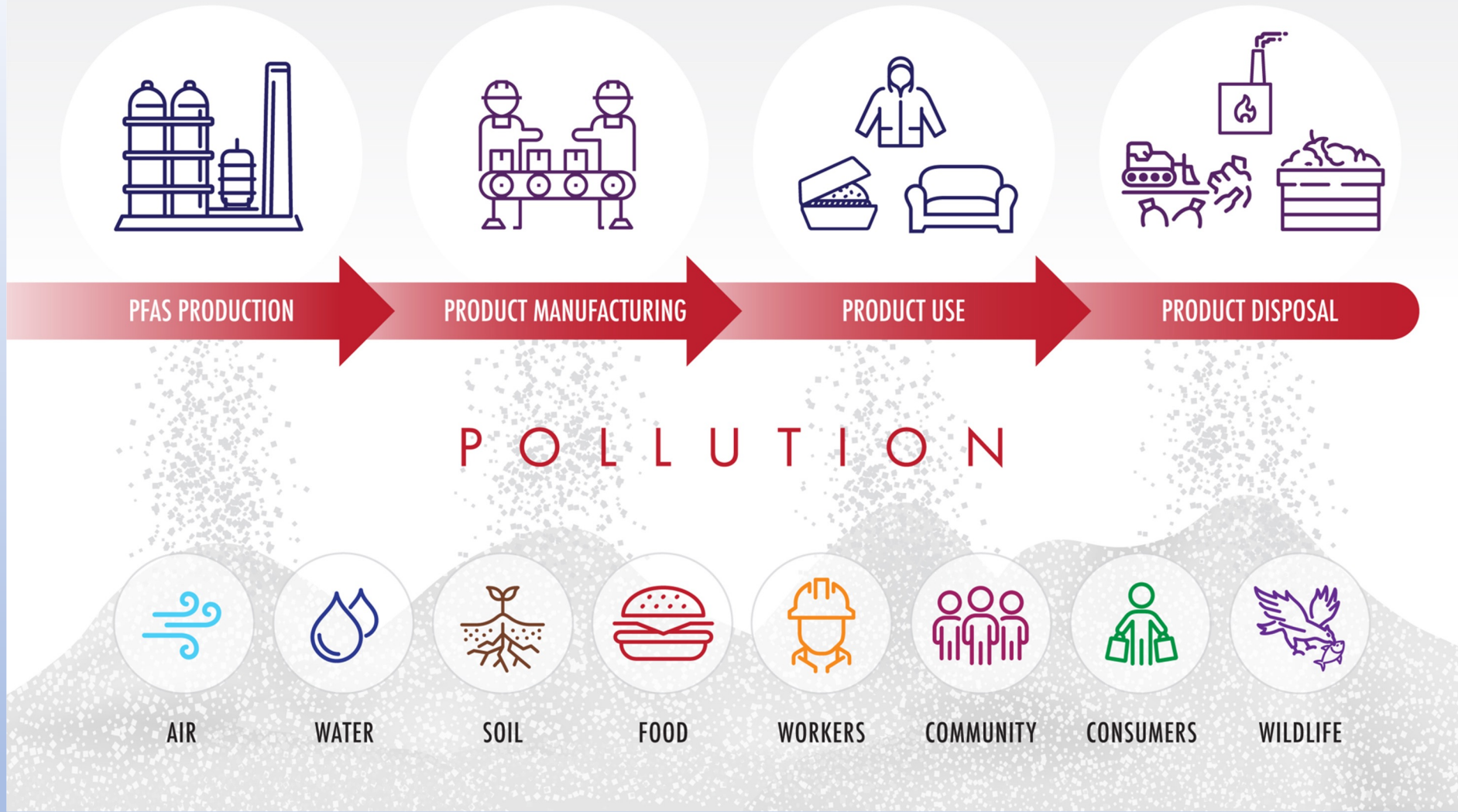
Mike Schade

Director, Mind the Store

Toxic-Free Future

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Communities and Workers Impacted by PFAS Chemical Manufacturing



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ENVIRONMENTAL HEALTH

Forever chemical found in Cumberland County wells 25 miles from Chemours

A type of PFAS was detected in wells between Wade and Falcon, seven miles from the previously known border of contamination.

Textile Mills and PFAS

- Wastewater discharges

“Based on a small number of sample results, the Agency determined that **PFAS, including legacy long-chain PFAS, are present in wastewater discharges from textile mills to POTWs. Most textile mills are not monitoring for PFAS and may be discharging PFAS to POTWs or surface waters**” – U.S. EPA

<https://www.epa.gov/eg/textile-mills-effluent-guidelines#detailed-pfas-study>

- [One in-depth study](#) of a textile mill in China found elevated levels of PFAS in the factory effluent, as well as in the indoor air, indicating pollution of surface water as well as workers' exposure to PFAS.
- Exposure of workers at this mill to volatile PFAS was estimated at **about 100,000 times that of the general Western population.**



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Textiles: Effects of Weathering



- [van der Veen et al.](#): weathered outdoor gear with durable water repellent
- Increased levels of volatile & persistent PFAS
- “In most weathered samples the PFAA concentrations **increased by 5- to more than 100-fold**, while PFAAs not detected in the original textiles were detected in the weathered samples”
- “ The concentrations of volatile PFASs also increased, by a **factor up to 20.**”

Car Seats: Ecology Center & Indiana University Study

- Half of the car seats (bought 2018) had PFAS-treated fabric. They were treated with fluorotelomer-based polymers.
- [Levels of certain PFAS went up](#) after exposure to UV light.



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PFAS Released Into Wastewater From Treated Textiles in Laundry

- [In an experiment](#) simulating laundering of treated jackets and pants, PFAS were detected in laundry water at relatively high concentrations.
- [PFAS detected in microplastic fibers](#) - estimated the amount of PFAS released along with them at up to 2,064 pounds per year in the European Union.

Table 10. PFAS concentrations (ng g⁻¹) determined in the **laundry** wash fractions.

	Outdoor Jacket Gore-Tex™ - Brand #1 CEC_050	Outdoor Jacket Gore-Tex™ - Brand #2 CEC_149	Waterproof trousers CEC_080	Cycling Jacket CEC_130	Cycling Jacket PTFE CEC_131
PFBA	19	69	4.1	0.5	11
PFPeA	0.7	1.6	5.1	0.6	<LOD
PFHxA	4.4	16	26	3.2	1.7
PFHpA	0.2	1.5	4.4	2.9	0.3
PFOA	<LOD	<LOD	7.1	18	0.7
PFNA	<LOD	<LOD	1.3	2.6	<LOD
PFDA	<LOD	<LOD	3.6	5.3	<LOD
PFBS	59	150	<LOD	<LOD	34
PFOS	<LOD	<LOD	<LOD	0.7	<LOD
6:2 FTS	1.3	9.4	0.2	0.4	<LOD
8:2 FTS	<LOD	<LOD	1.9	2.8	<LOD
6:2 FTCA	14	63	<LOD	<LOD	23
6:2 FTUA	4.7	17	<LOD	<LOD	6.2

Analytes that remained systematically <LOD across the 5 items considered are not shown in this table.



Exposures Through Multiple Routes

- Food
- Drinking water
- Indoor air
- House dust
- Cord blood, breast milk



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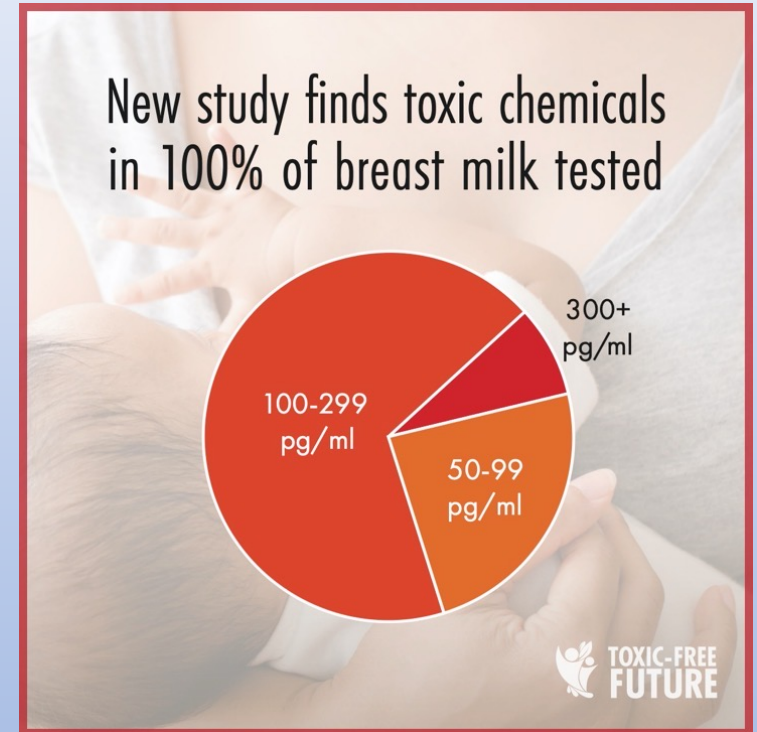


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PFAS in Breastmilk of Washington Mothers

- PFAS detected in 100% of samples
- 16 PFAS total detected, 12 PFAS detected in more than 50% of samples
- Newer PFAS detections doubling globally every four years



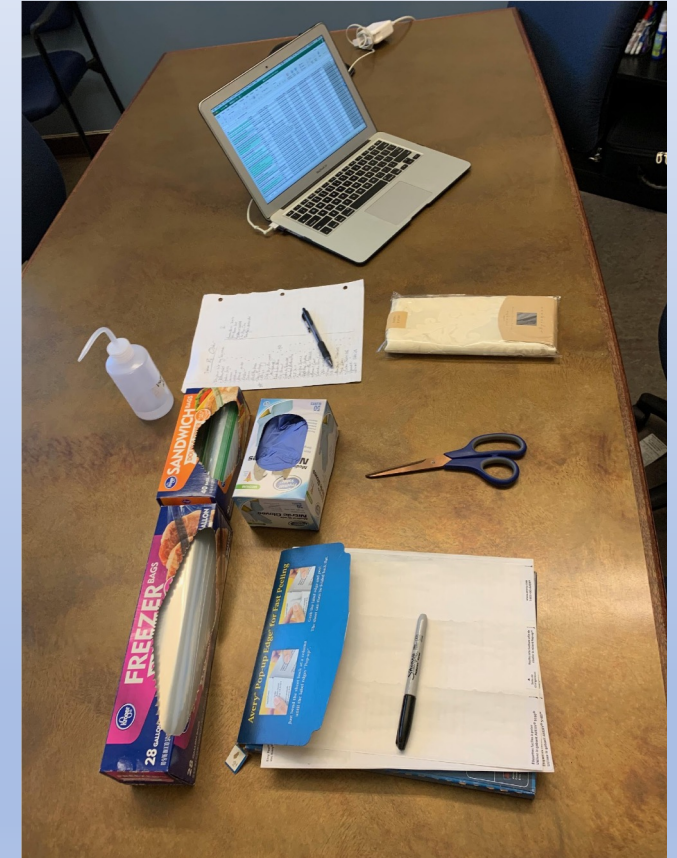
New Research: Toxic Convenience

- Sampled three product categories: outdoor apparel, bedding, and tablecloths and napkins
- Selected mainly but not all stain-resistant items
- Purchased from ten major retailers



Analysis: Total Fluorine and Individual PFAS

- Items screened with total fluorine via combustion with ion-selective electrode
- Items with total fluorine > 100 ppm subjected to analysis for 51 PFAS
- Analytes included volatile PFAS (fluorotelomer alcohols) as well as ionic PFAS (e.g. PFOA)





New testing found toxic chemicals in comforters, rain jackets, hiking pants, and tablecloths.



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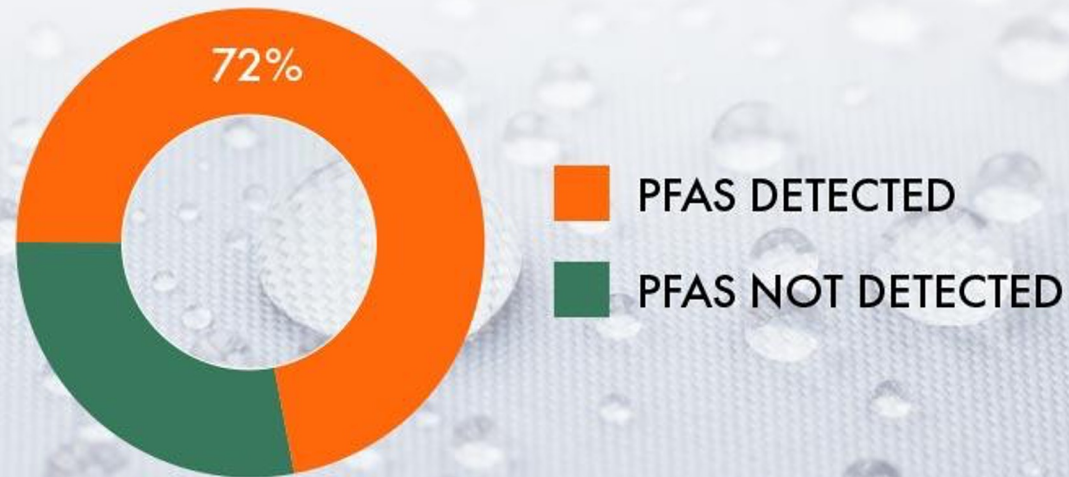


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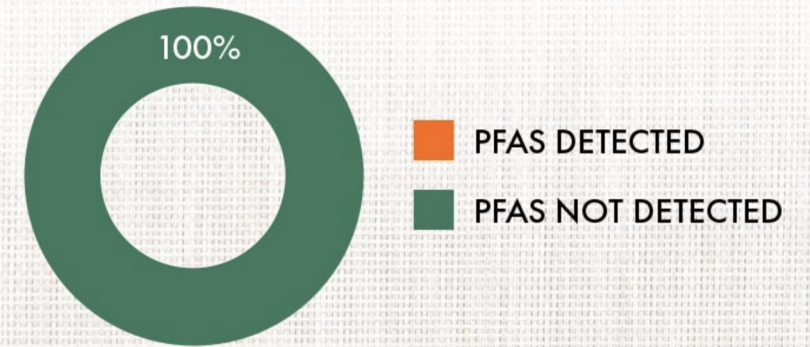
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PFAS in Products Marketed as Stain and Water Resistant

Products Marketed as Stain- or Water-Resistant



Products **NOT** Marketed as Stain- or Water-Resistant





All 10 retailers where we purchased items sold products containing these chemicals.



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Is your rain jacket **TOXIC?**

New testing found PFAS
"forever chemicals" in most
water-resistant outdoor gear.



FIGURE 1:
Outdoor Apparel Marketed as Stain- or Water-Resistant



We detected PFAS in 15 of 20 jackets, shirts/pullovers, and pants, all of which were marketed as stain- or water-resistant.



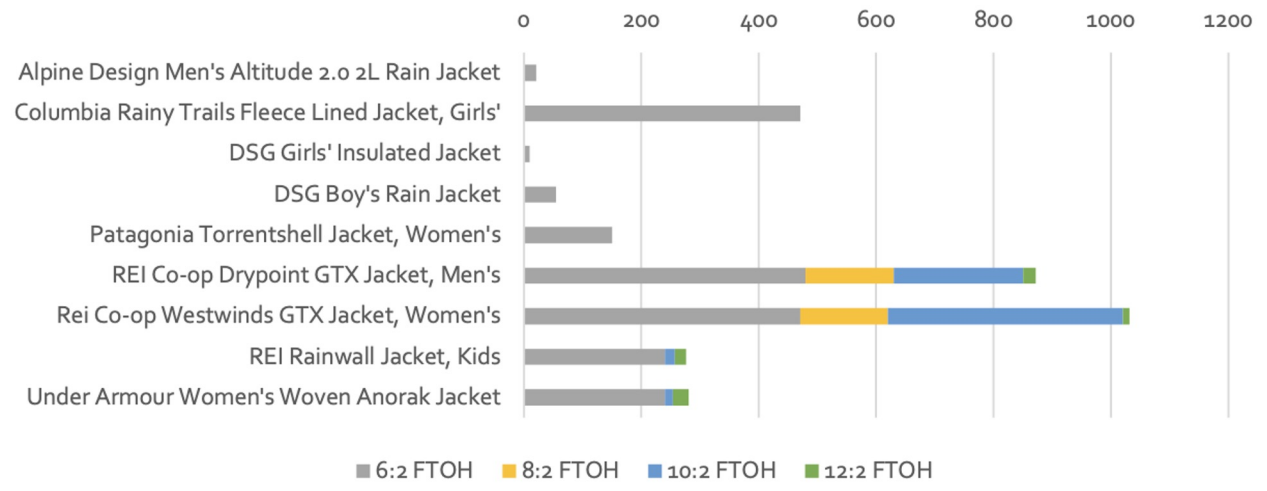
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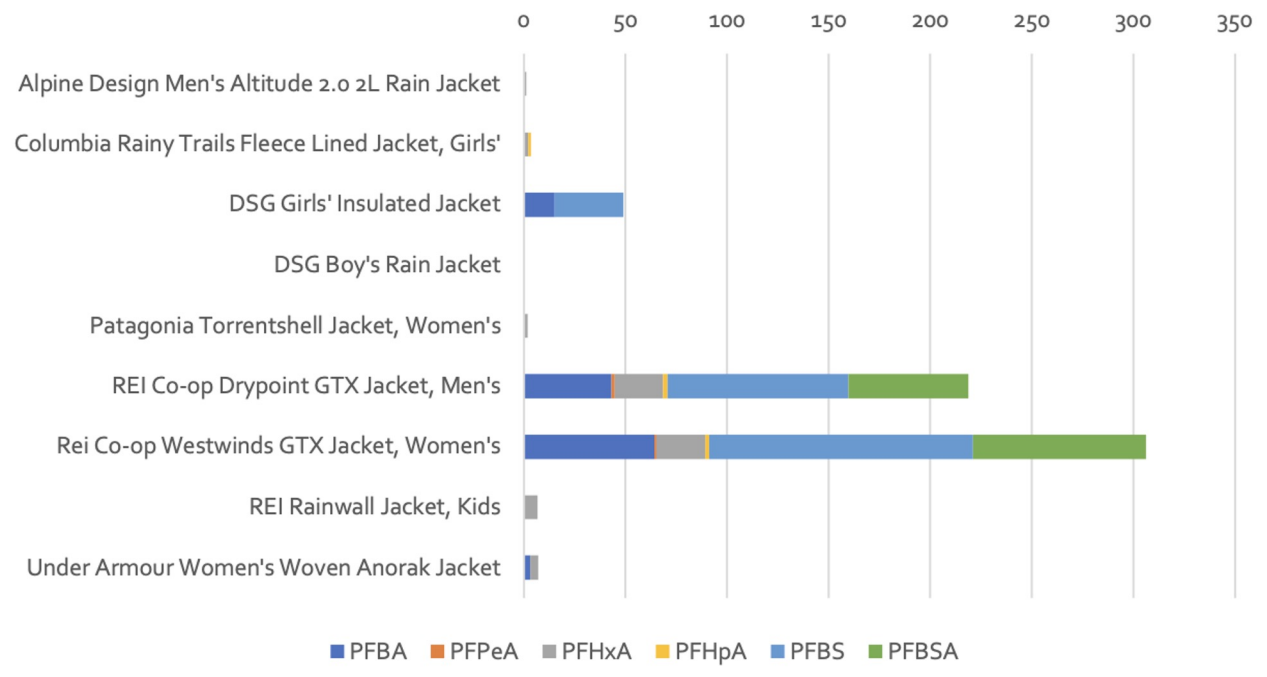
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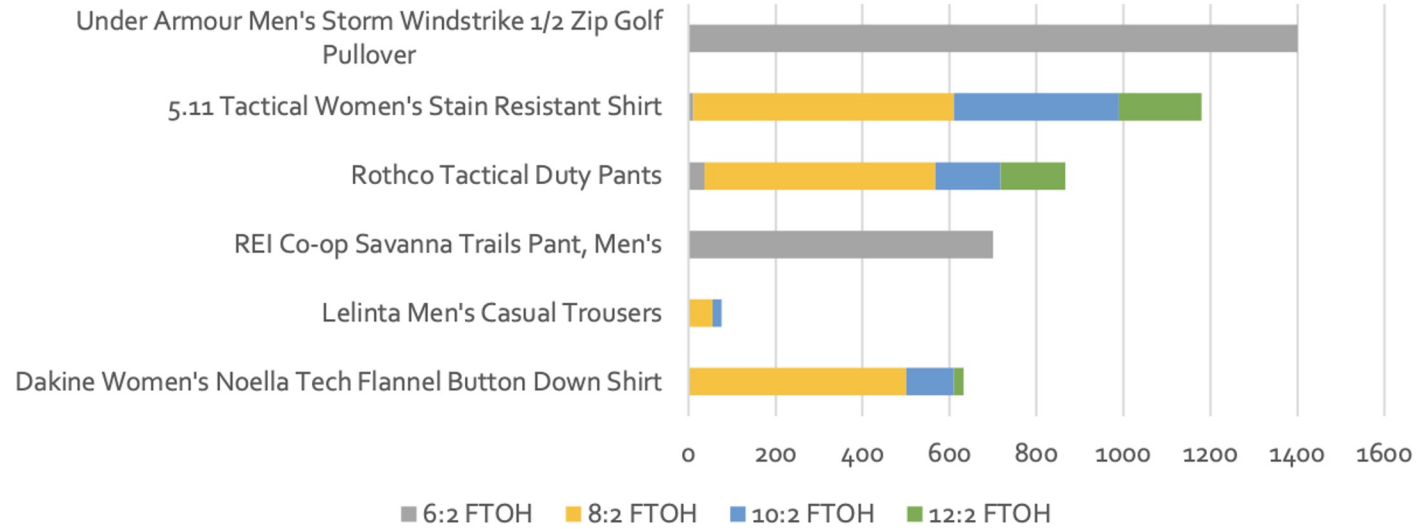
FTOHs in Jackets (ppb)



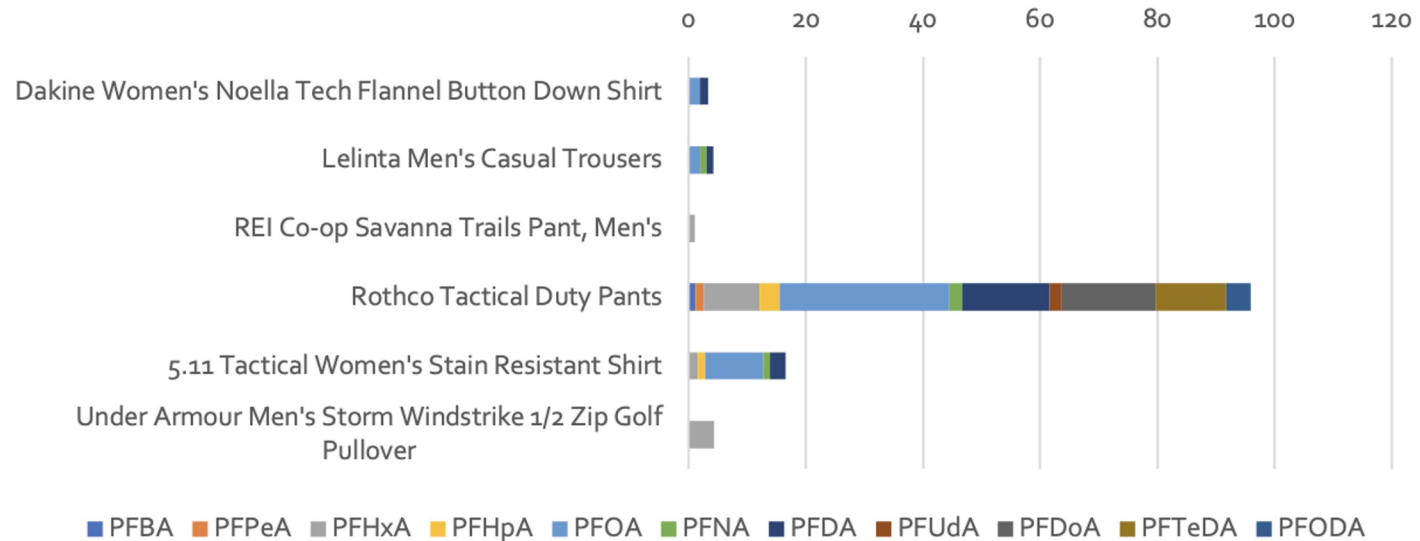
Other PFAS in Jackets (ppb)



FTOHs in Other Apparel (ppb)



Other PFAS in Other Apparel (ppb)

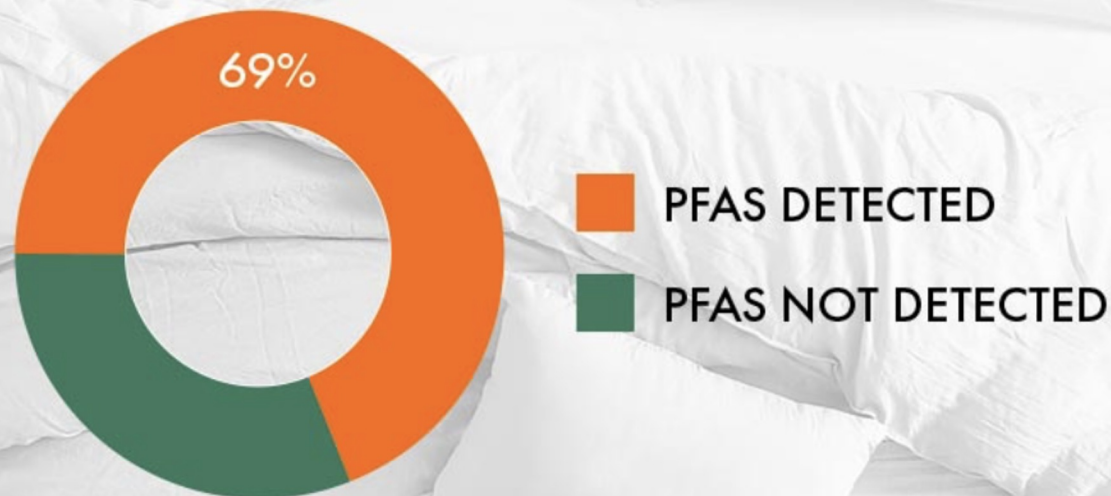


Are toxic chemicals invading your slumber?

New testing found PFAS “forever chemicals” in most products labeled stain- or water-resistant, including comforters and mattress pads.



FIGURE 2:
Bedding Marketed as Stain- or Water-Resistant



Nine out of the 13 bedding items marketed as stain- or water-resistant contained PFAS.



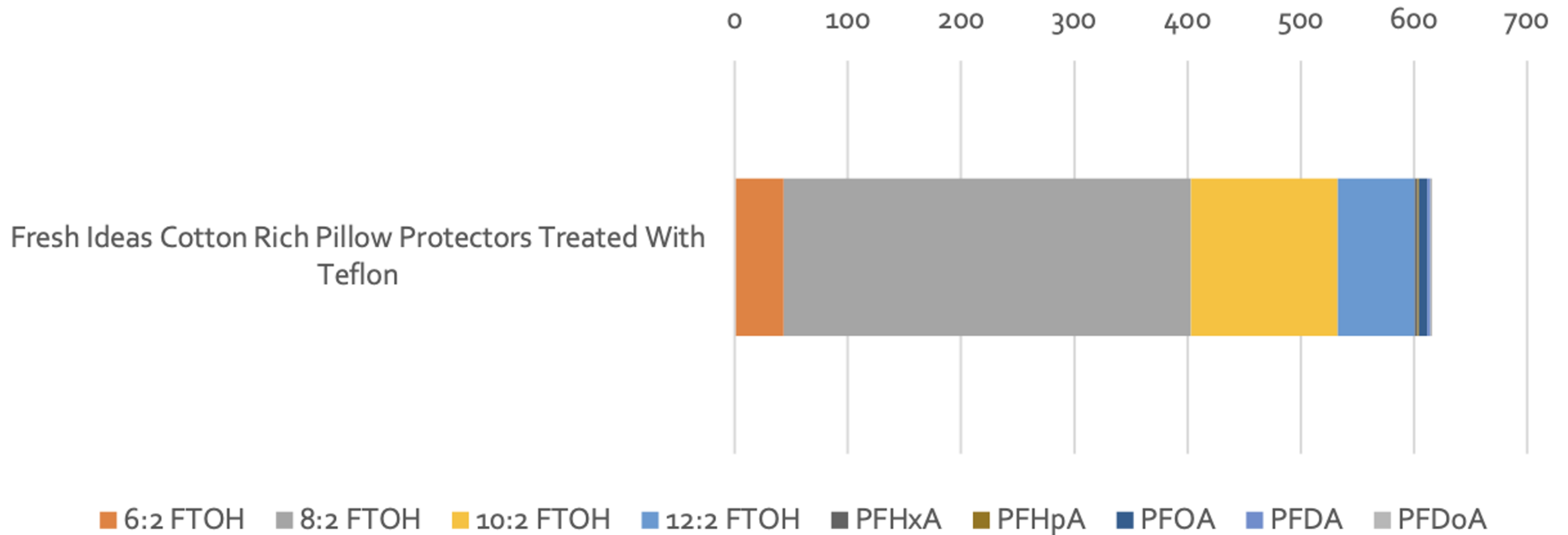
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PFAS in Sheets (ppb)

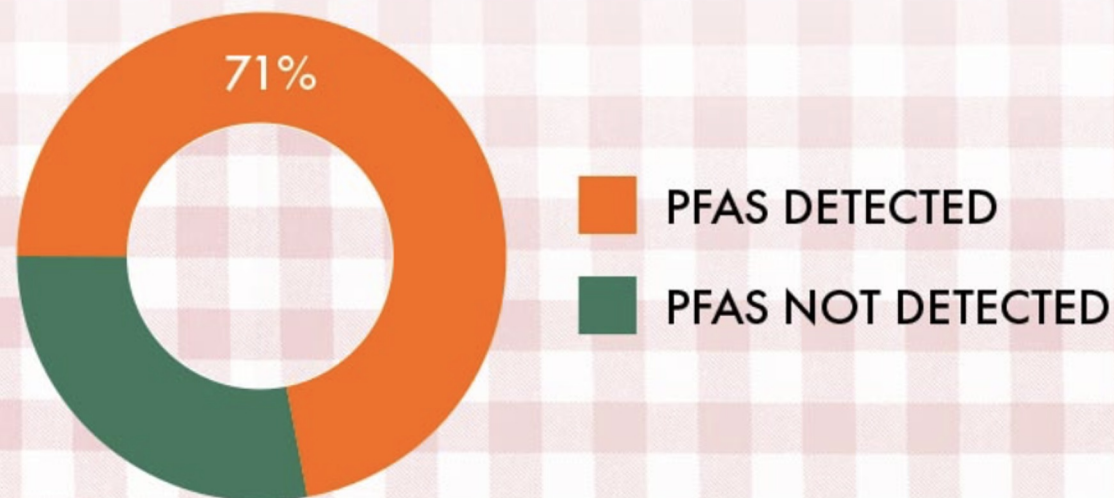


Are you unwittingly serving up a side of toxic chemicals with dinner?

New testing found PFAS “forever chemicals” in most products labeled stain- or water-resistant, including tablecloths and napkins.



**FIGURE 3:
Tablecloths and Napkins Marketed as
Stain- or Water-Resistant**



We detected PFAS in 10 of 14 tablecloths and napkins with stain or water resistance claims.



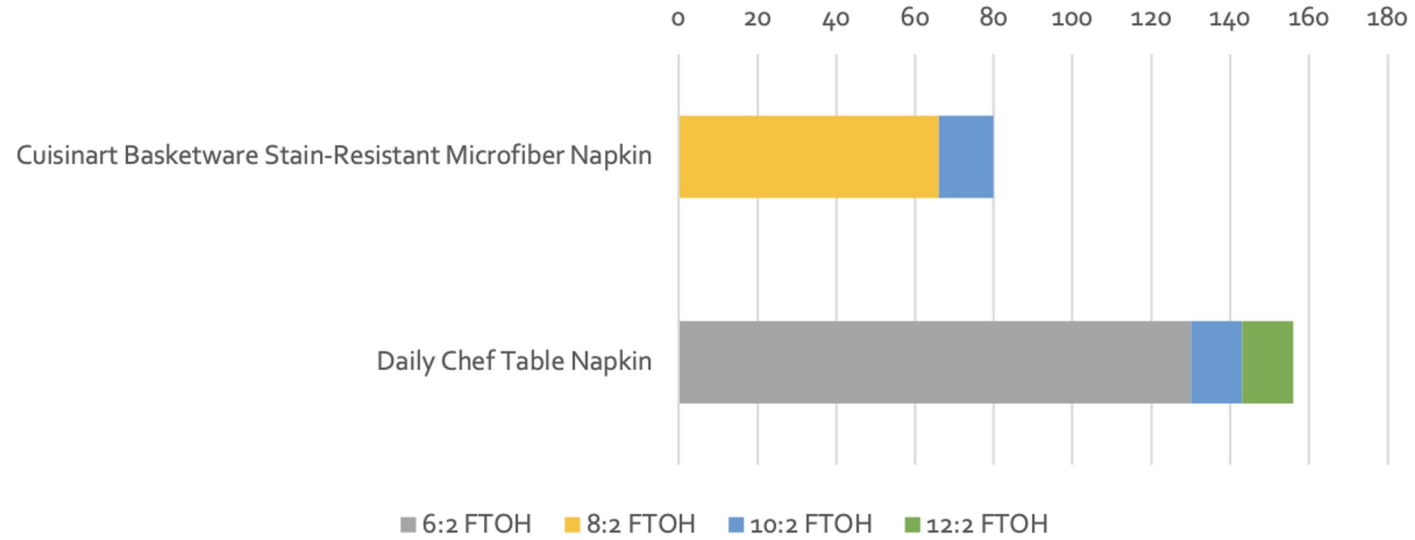
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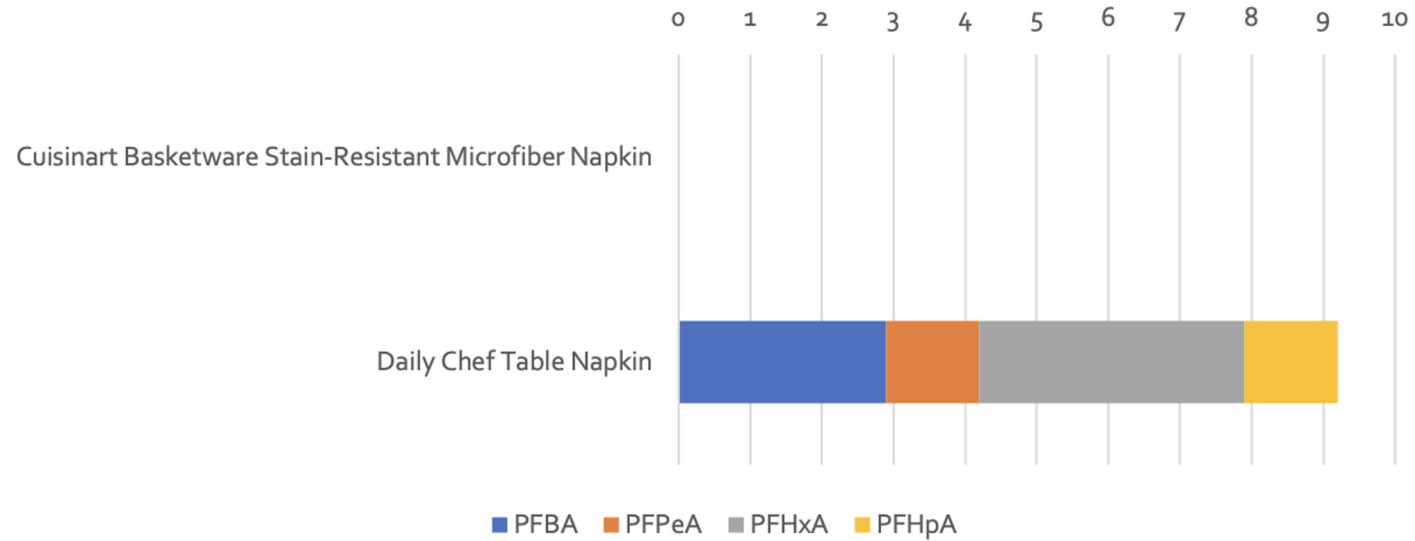
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FTOHs in Napkins (ppb)



Other PFAS in Napkins (ppb)










Long-Chain PFAS Detected In Most Samples

- Most PFAS-containing items (**25 out of 34, or 74%**) tested positive for long-chain PFAS and **in some cases, they were the most abundant or only PFAS detected.**

Table 1: PFAS in Outdoor Apparel

● = older PFAS detected ▲ = newer PFAS detected

Retailer	Product	PFAS Detected
All Items Labeled Stain- or Water-Resistant		
	Columbia Rainy Trails Fleece Lined Jacket, Girls'	▲
	Mammut Kento HS Hooded Jacket, Men's	
	Patagonia Torrentshell Jacket, Women's	▲
	REI Co-op Drypoint GTX Jacket, Men's	● ▲
	REI Co-op Westwinds GTX Jacket, Women's	● ▲
	REI Rainwall Jacket, Kids	● ▲
	REI Co-op Sahara Convertible Pant, Women's	
	REI Co-op Savanna Trails Pant, Men's	▲
	Canis Cute Kids Girls' New Flowers Hooded Raincoat	
	5.11 Tactical Women's Stain Resistant Shirt	● ▲
	Lelinta Men's Casual Trousers	●
	Rothco Tactical Duty Pants	● ▲



THE GOOD NEWS?
**There were PFAS-free
items in each category
we tested!**



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Recommendations for Policymakers - Textiles

- **End the use of PFAS** in all textiles.
- **Adopt comprehensive chemicals policies** that require ingredient disclosure, restrict the most dangerous chemicals, and identify safer alternatives using tools such as GreenScreen for Safer Chemicals[®] and ChemFORWARD.
- **Ensure clean-up of contaminated communities**, holding polluters financially responsible.
- **Use governmental purchasing power** to avoid products containing PFAS and spur movement toward the safest substitutes.



Thank you!

The full report is available at: <https://toxicfreefuture.org/pfas-in-stain-water-resistant-products-study/>

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www.MindTheStore.org

www.RetailerReportCard.com

www.ToxicFreeFuture.org





**has the power to lead
the outdoor industry
in a bold phase-out of
PFAS from products**

Over 100,000 consumers demand action



How Safer Products for WA Sets Precedents

- Tackles **classes of chemicals** NOT single chemicals in products (PFAS, organohalogen flame retardants, industrial phenolics, phthalates are **FIRST** classes to be addressed)
- **Hazard-based** with assessment of safer alternatives.
- Directs Ecology to address priority products with identified chemical classes on **specific timelines**
- Gives Ecology **authority to ban, restrict or require disclosure** of chemicals in products



First Priority Products Targeted Under Safer Products for WA

- Per- and polyfluoralkyl substances (PFAS) in carpets, upholstery, and other home furnishings, along with stain- and water-resistance treatments for those items;
- Organohalogen (OFR) and other toxic flame retardants in electronic casings (such as televisions) and recreational polyurethane foam (e.g. foam in gym pits);
- Phthalates in beauty and personal care products and vinyl flooring;
- Bisphenols (e.g. BPA and BPS) in can linings and thermal paper (such as receipts);
- Alkylphenol ethoxylates (APEs) in detergents; and,
- PCBs in printing inks and paints.

