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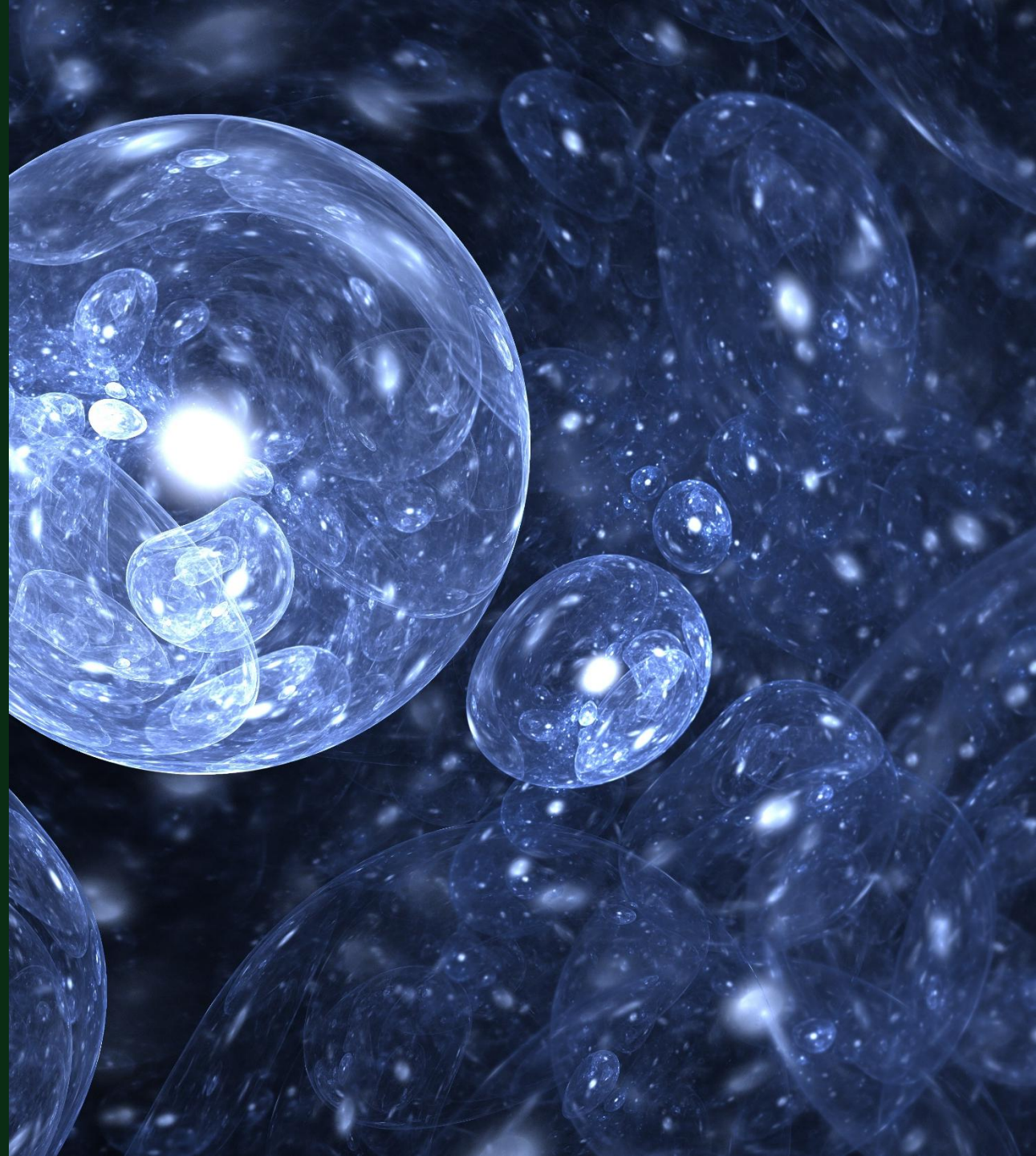
ERM WEBINAR SERIES: FAST FLUORINATED FACTS

PFAS in the News

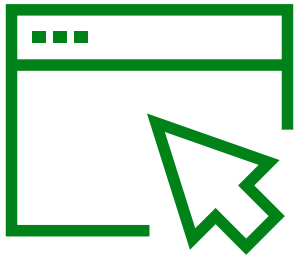


FEBRUARY 5, 2026

Sustainability is our business

Welcome Participants

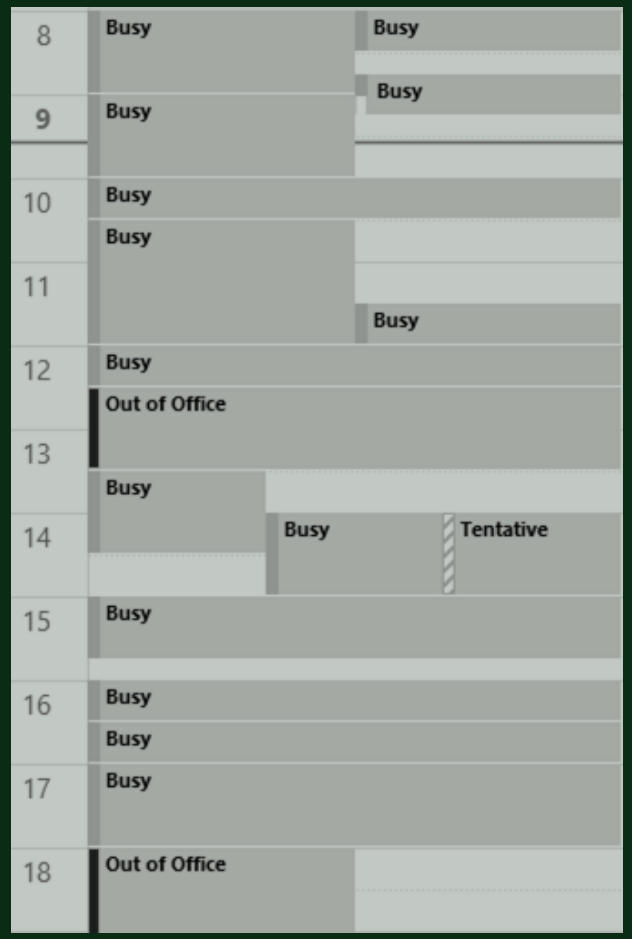
Your **lines have been muted** to ensure our presenters are not distracted by background noise

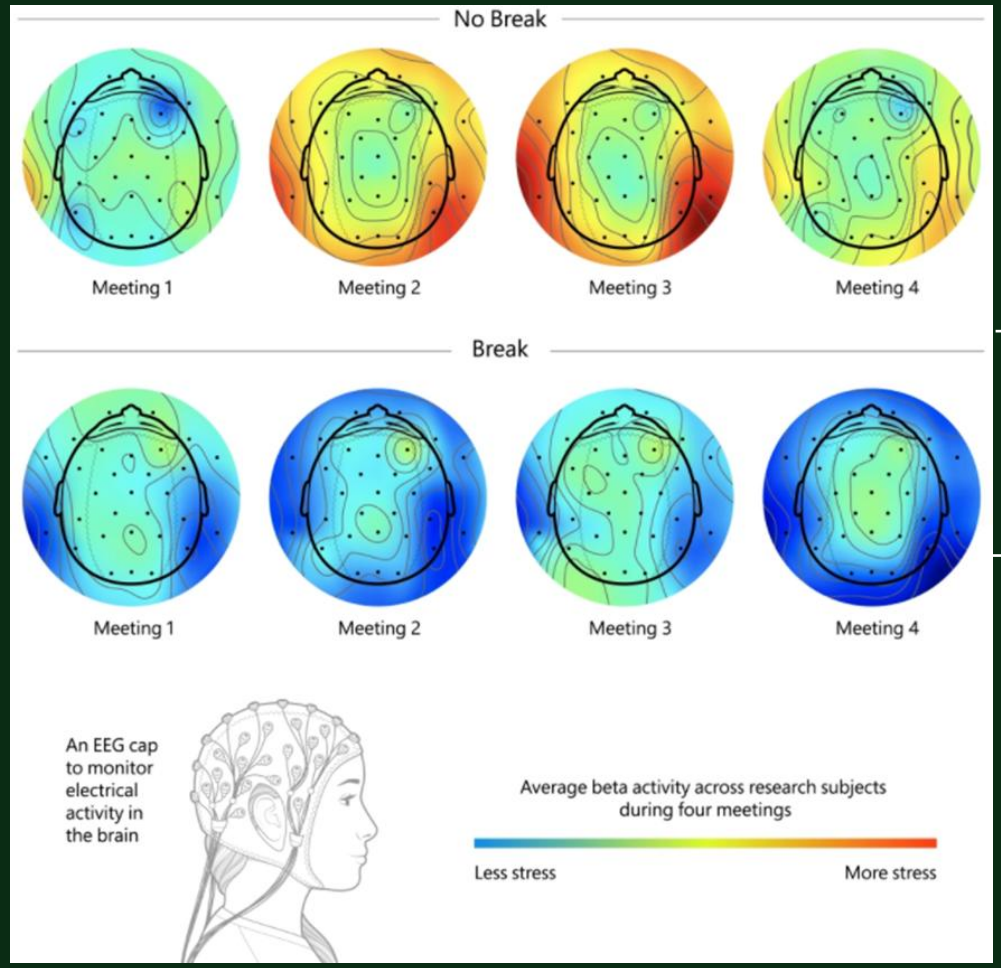


Attendees are encouraged to **participate by using the chat/Q&A** via the chat box function – select “All Panelists and Attendees” or only “All Panelists”

A link to the **recording of this session & slides** will be provided in our follow-up email sent next week

Safety Moment





Takeaways:

Breaks between meetings allow the brain to "reset," reducing a cumulative buildup of stress across meetings

Transitioning between meetings can be a source of high stress

Back-to-back meetings can decrease your ability to focus and engage

1 PFAS Vapor Intrusion (VI)

2 PFAS Incineration

3 TSCA Reporting Requirements

4 PFAS Product Bans

The information provided in this webinar does not constitute legal or regulatory compliance advice.

Speakers

Aaron Friedrich
NA Remediation Director, Partner

Jesse Guillet
Managing Technical Consultant, Scientist

Kate Sellers
Technical Partner, Engineer

Richelle Romanchik
Managing Consultant, Sustainable Product & Supply Chain

PFAS Vapor Intrusion (VI)

AARON FRIEDRICH

Status of PFAS and VI Investigations

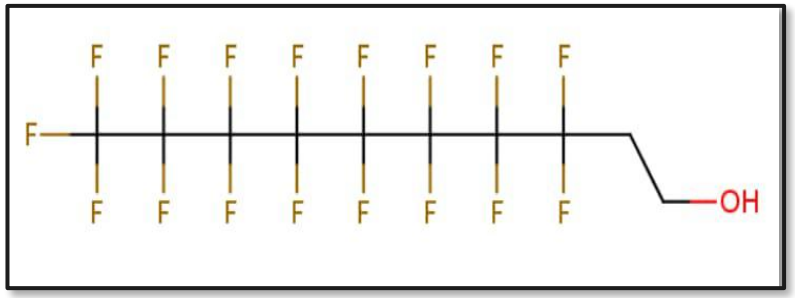
Some PFAS are sufficiently volatile to qualify as vapor-forming chemicals suggesting they be primarily in vapor phase

Volatile PFAS Compounds Identified
While most PFAS are low-volatility, certain compounds—such as FTOHs and some PFCAs—exhibit sufficient vapor pressure to be considered vapor-forming chemicals. These compounds have been detected in SG and IA in recent studies, raising concerns about VI.

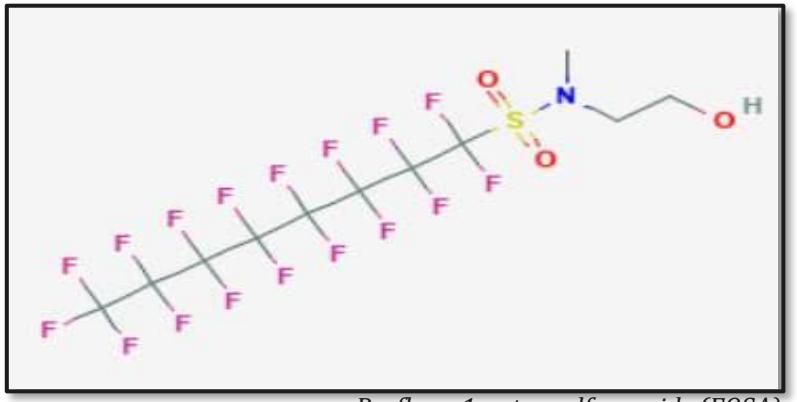
Analytical and Sampling Challenges
There is no standardized method for sampling and analyzing vapor-phase PFAS. Recent studies have validated thermal desorption GC/MS/MS techniques for FTOHs and sulfonamides, but issues like compound degradation and positive interferences remain.

Data Gaps and Risk Assessment Limitations
Quantitative VI risk evaluation for most PFAS compounds is currently not possible due to the lack of inhalation toxicity values and Henry's Law constants. Research emphasizes the need for more data on volatility thresholds, subsurface conditions, and exposure concentrations

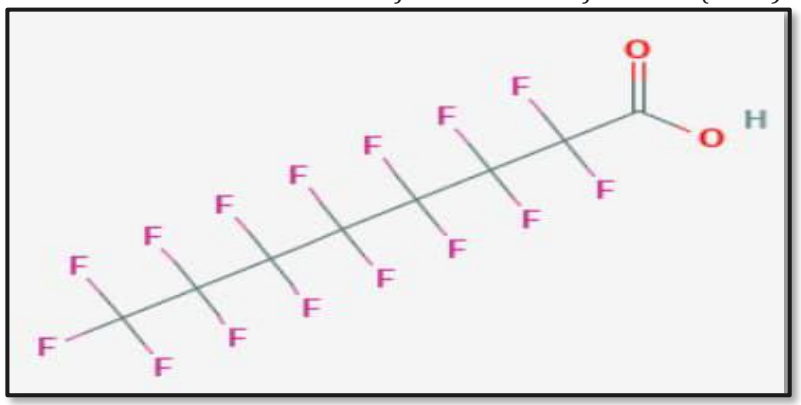
Emerging Conceptual Site Models and Monitoring Approaches
Evaluating PFAS VI requires adapting traditional VI frameworks – evaluating vadose zone permeability, sewer conduits, and building conditions. However, understanding the risks and PFAS + VI is still undergoing research.



Fluorotelomer alcohols (FTOH)



Perfluro-1-octansulfonamide (FOSA)



C4 to C7 and C8 Perfluorocarboxylic acids (PFCAs)

PFAS VI: 2026 VI Toolkit – ITRC Guidance

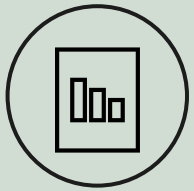
ITRC acknowledges the knowledge gaps associated with vapor-forming PFAS and the relation to the VI pathway and determined the VI toolkit should summarize the current state of science through 2025.

Volatility

Limited reliable data available for PFAS physical and chemical properties to help defined vapor-forming compounds

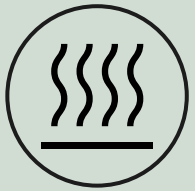
PFAS Indoor Air SLs

Various regulatory agencies have developed guidance values and criteria for PFAS in Air



Analytical Methods

TO-17 has been modified to analyze for a subset of PFAS; subsets of PFAS can be analyzed for point sources via stack testing methods; however, the methods haven't been modified for VI-related sampling



PFAS in Soil Vapor

Vadose zone transport is currently a focus area for researchers

PFAS in Indoor/Outdoor Air

FTOHs, FASAs, FASEs, and ultrashort-chain PFAS have been detected in indoor and outdoor samples. Not all vapor-forming PFAS are known or able to be detected by currently published sampling methods

PFAS Transformation

Non-volatile terminal PFAS, such as PFNA, PFOA, and PFHpA can also be formed from degradation of FTOHs, and PFOS can be released from transformation of FOSE

Incineration as a Developing Option for Destruction of PFAS

JESSE GUILLET, PHD

Need for Approved Destruction and Disposal Methods for PFAS

To date, EPA has declined to endorse a specific method for the destruction of PFAS

- The manufacture and use of PFAS generates a variety of waste streams in solid, liquid, and gas phases
- The Department of Defense (DOD) has projected a need to dispose of more than 2 million gallons of aqueous film-forming foam (AFFF)
- 2024 *Interim Guidance on the Destruction and Disposal of PFAS* presented incineration (thermal treatment) along with landfilling and underground injection as disposal methods, but EPA did not endorse a particular technique
- Guidance cited concerns around release of volatile & semi volatile PFAS, products of incomplete destruction (PIDs)
- DOD has had a moratorium on incineration since 2023 over concerns about environmental impact

Solid Waste Streams

Solid waste streams for PFAS include spent GAC & filters, production byproducts, contaminated soil, biosolids

Liquid Waste Streams

Liquid waste streams for PFAS include wastewater, landfill leachate, unused AFFF concentrate, spent plating/etching baths, spent or unused liquid products (e.g., paints)

Gas Waste Streams

Gas waste streams for PFAS include stack emissions, volatile compounds, exhaust, releases of vapors and aerosols during use, landfill gas

2025 Study Indicates Incineration is an Effective Method for PFAS Destruction

EPA/Clean Harbors published study in September 2025

Study

- Waste feed for the study was typical hazardous waste (chemical & industrial waste) spiked with AFFF concentrate, a selection of nine common PFAS, or hexafluoroethane (C_2F_6)
- Residuals were analyzed for PFAS content, emissions monitored by OTM-45, OTM-50, and Method 0010

Results

- Destruction and Removal efficiencies (DRE) of 99.999% were achieved for spiked PFAS, 99.99% for C_2F_6
- PIDs were evaluated by OTM-50 – only low concentrations detected.
- A dispersion model was applied to emissions data to predict ambient air concentrations for 12 PFAS – all modeled concentrations were below the concentrations in state ambient air quality guidance

Limitations

- Incineration requires temperatures greater than 1,100°C, residence times within kiln around 60 minutes
- Study was limited to a single incineration facility
- Some PFAS (e.g. TFA) still lack analytical methods

Movement since publication of report:

- October 2025: Washington state opts for incineration to destroy state's surplus of AFFF concentrate
- November 2025: DOD briefing to Congress indicates it expects thermal destruction techniques to be resumed
- January 2026: DOD indicates that it will revise existing Destruction and Disposal Guidance, may withdraw moratorium on use of incineration
- Spring 2026: EPA is expected to release update to the 2024 *Interim Guidance on the Destruction and Disposal of PFAS*, publish an additional study on efficacy of incineration as a destruction technique

TSCA Reporting Requirements

KATHLEEN SELLERS, PE

PFAS reporting under Toxic Substances Control Act § 8(a)(7)

2019

National Defense Authorization Act for Fiscal Year 2020 directed US EPA to create a comprehensive PFAS reporting program under TSCA

2023

Reporting regulations promulgated: any person that manufactures (including import) or has manufactured (including imported) PFAS or PFAS-containing articles in any year since January 1, 2011, to electronically report information regarding PFAS uses, production volumes, disposal, exposures, and hazards.

2024

US EPA promulgated a direct final rule to push back the start of the reporting period from November 2024 to July 2025

2025

May

Reporting deadline pushed to October 2026

November

US EPA proposes exemptions and unspecified extension of reporting deadline

Preparing for Reporting in the Face of Uncertainty

Two points we're watching:

Exemption

- Proposed exemption for imported articles
- "EPA recognizes that *importing* PFAS in articles between 2011-2022 is an activity about which manufacturers are unlikely to have known or reasonably ascertainable information. EPA … now proposes to exempt importing articles in an effort to apply reporting obligations, to the extent feasible, to those persons likely to have information... In addition, EPA proposes that requiring reporting from importers of articles containing PFAS exceeded EPA's authority under TSCA section 8(a)(7)." [90 FR 50923]

New Deadline for Reporting

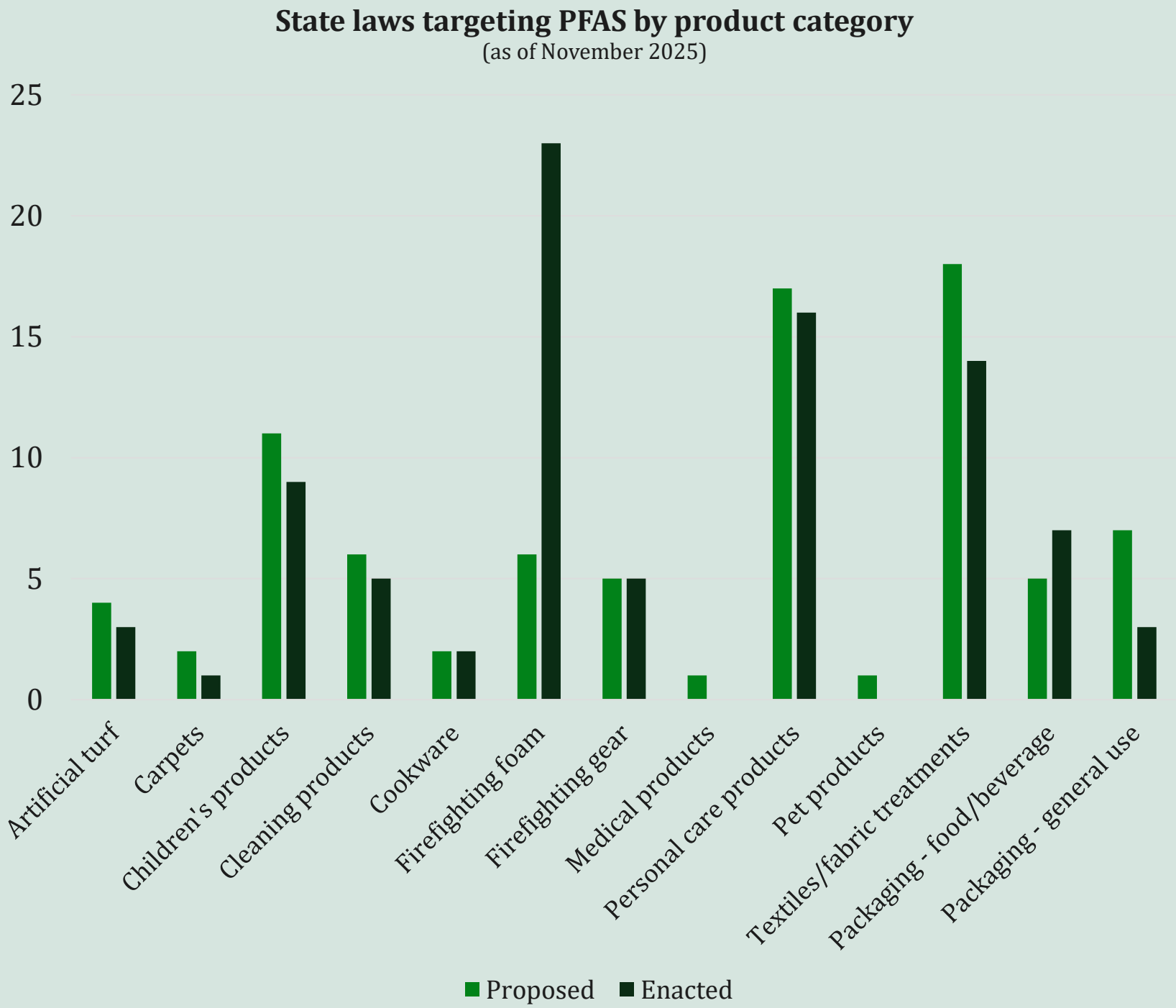
- November proposal not specific
- "The time EPA took to develop the 2023 final rule and engage with stakeholders on the content of the rule, as well as the time that has passed since promulgation of the 2023 final rule, suggests to the Agency that reporters have had adequate time to consider how they intend to comply with the rule." [90 FR 217: 50930]
- Submission period may open in August 2026 and close in November 2026.

PFAS Product Bans

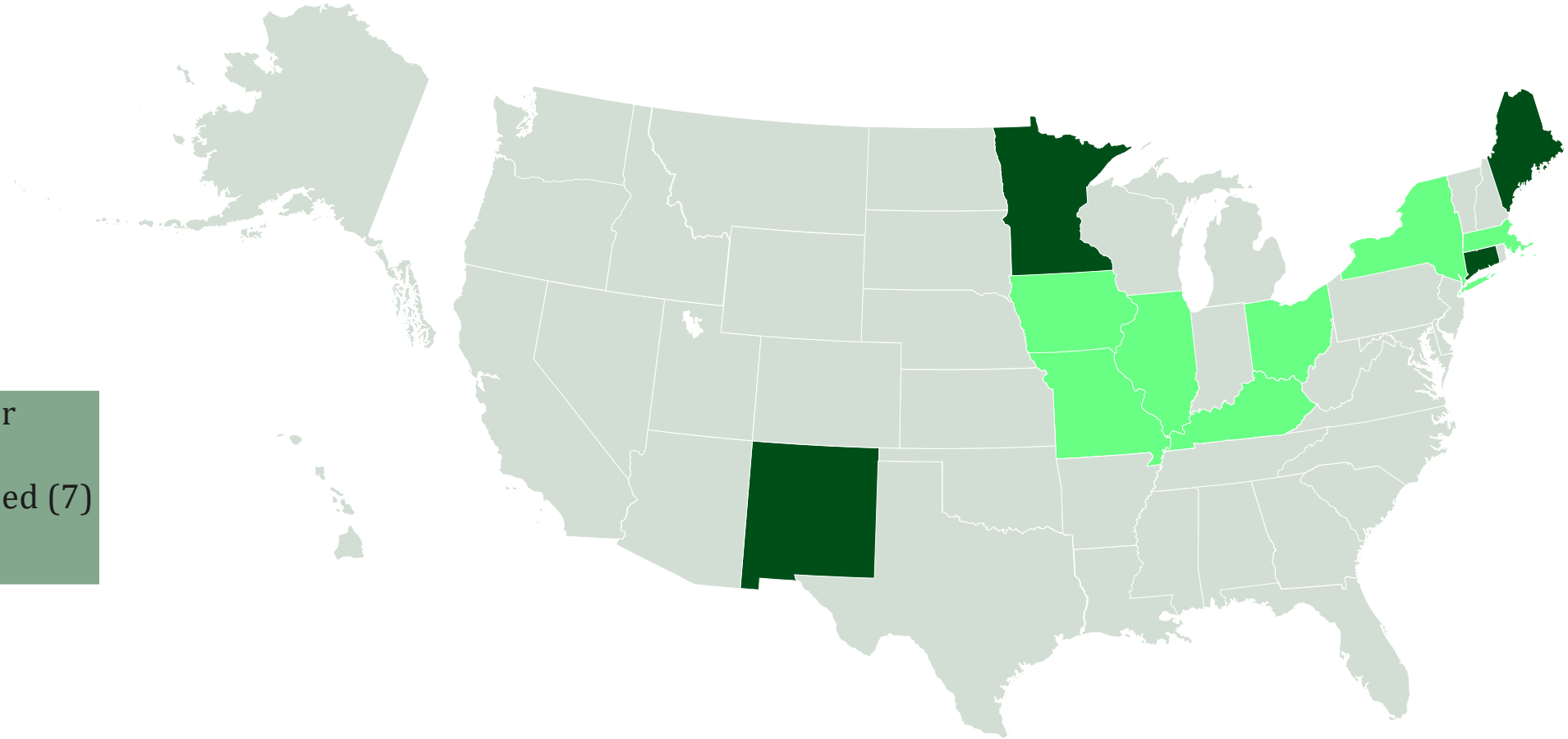
RICHELLE ROMANCHIK

US States are Increasingly Banning PFAS in Products and Packaging

- State legislation often reflects initial concerns over certain consumer products and then expands applicability over time
- Fourteen states will broadly ban PFAS in products by 2033
- Some state laws exempt Currently Unavoidable Uses of PFAS, and include provisions to apply for such exemptions



PFAS Reporting Requirements



Eleven states have either enacted (4) reporting requirements or proposed (7) reporting requirements

Enacted Reporting Requirements

Proposed Reporting Requirements

Best Practices and Watchouts

Momentum may be slowing … or not?

- Since October 2025, states have introduced two new bills on PFAS in products and two new bills on PFAS in packaging
- A number of the bills introduced in 2024 or 2025 (not including the new bills indicated above) have not advanced

Supplier data appear to be improving but still tend to be weak.

Know the relevant diligence requirements and keep records of supplier outreach and other research into product composition.

Create a master plan.

Identify relevant bans and reporting requirements and combine information gathering.

Watch out for different definitions.

Data collected for TSCA or TRI reporting may not suffice because many states define PFAS more broadly than does the US EPA.

Leverage exemptions for Currently Unavoidable Use.

Those requirements are currently evolving.

Q&A

Thank you