



PFAS: The Tip of the Tort Iceberg?

An Emerging Issues Presentation Featuring Assured Research and Verisk's Arium Liability Analytics

July 18, 2024

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Agenda & Speakers

- EPA Activity: What's New for 2024?
- Recent Health Research: No Good News
- The Remediation Challenge
- Estimating the Ground-up Loss Potential
- Insurance Implications and Possible Responses to the PFAS Challenge



Greg Scoblete, Emerging Issues Analyst, Verisk



Lucian McMahon, Senior Manager, Arium Liability Analytics, Verisk



William Wilt, President, Assured Research

PFAS: EPA Activity, New Health Research, and the Remediation Challenge



Greg Scoblete, Emerging Issues Analyst, Verisk



EPA Primary National Drinking Water Regulation: Final Rule

Compound	Final Maximum Contaminant Level (MCL)
PFOA	4 parts per trillion (ppt)
PFOS	4 ppt
PFHxS	10 ppt
PFNA	10 ppt
HFPO-DA (GenX)	10 ppt
Mixtures of two or more: PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) hazard index

- **By 2027:** Initial water system monitoring complete
- **By 2029:** Reduce PFAS levels if they exceed MCLs
- **By 2029:** Water systems must provide notice to public if they violate the MCLs

Legal Challenges Mounting...

- American Chemistry Council and National Association of Manufacturers
- American Water Works Association and the Association of Metropolitan Water Agencies

Other 2024 EPA Actions

Final

- CERCLA designations for PFOA, PFOS
- Added seven PFAS to Toxic Release Inventory reporting
- Updated guidance on PFAS disposal
- Testing ordered for NMeFOSE

Proposed

- Adding nine PFAS to the list of Resource Conservation and Recovery Act (RCRA) list of hazardous constituents

“...EPA will focus on holding accountable those parties that have **played a significant role in releasing or exacerbating the spread of PFAS into the environment, such as those who have manufactured PFAS or used PFAS in the manufacturing process**, and other industrial parties.” - *PFAS Enforcement Discretion and Settlement Policy Under CERCLA*

PFAS: No News Is Good News

A review of recent health research

- PFAS exposure in males linked to health issues in offspring
- Consumption of tea, processed meats, and food prepared outside the home tied to higher concentrations of PFAS in humans
- PFAS exposure may lead to shorter duration lactation
- Study of people exposed to significant PFAS contamination in Italy showed increase in all-cause mortality, cardiovascular disease, kidney and testicular cancers
- Research reveals PFAS can be absorbed by skin



- Contact lenses linked to higher PFAS levels in wearers, including at levels considered potentially unsafe
- List of cancers associated with PFAS exposure may be higher than previously thought, and includes potential links to brain, esophageal, and skin cancer
- UK otter study reveals potentially toxic PFAS substitutes (F-53B) also entering environment
- Occupational exposure for ski/snowboard waxers found to be higher than even some chemical industries

PFAS Removal: The Cleanup Begins...

Absorb, separate, destroy

Remediation challenges:

- PFAS seeps deep into ground, making excavation of contaminated soils difficult
- Existing underground injection wells for long-term PFAS waste storage are in limited supply
- Landfilling may result in additional PFAS releases
- Limited information on PFAS when incinerated in hazardous waste combustors
- Incineration at municipal waste combustors may re-release PFAS into the environment
- What's happening with the PFAS not addressed in EPA regulations?



Federal funding, settlements may only cover **20%** of PFAS cleanup and prevention costs -- *Bloomberg*

Estimating the Ground-Up Losses from PFAS Litigation

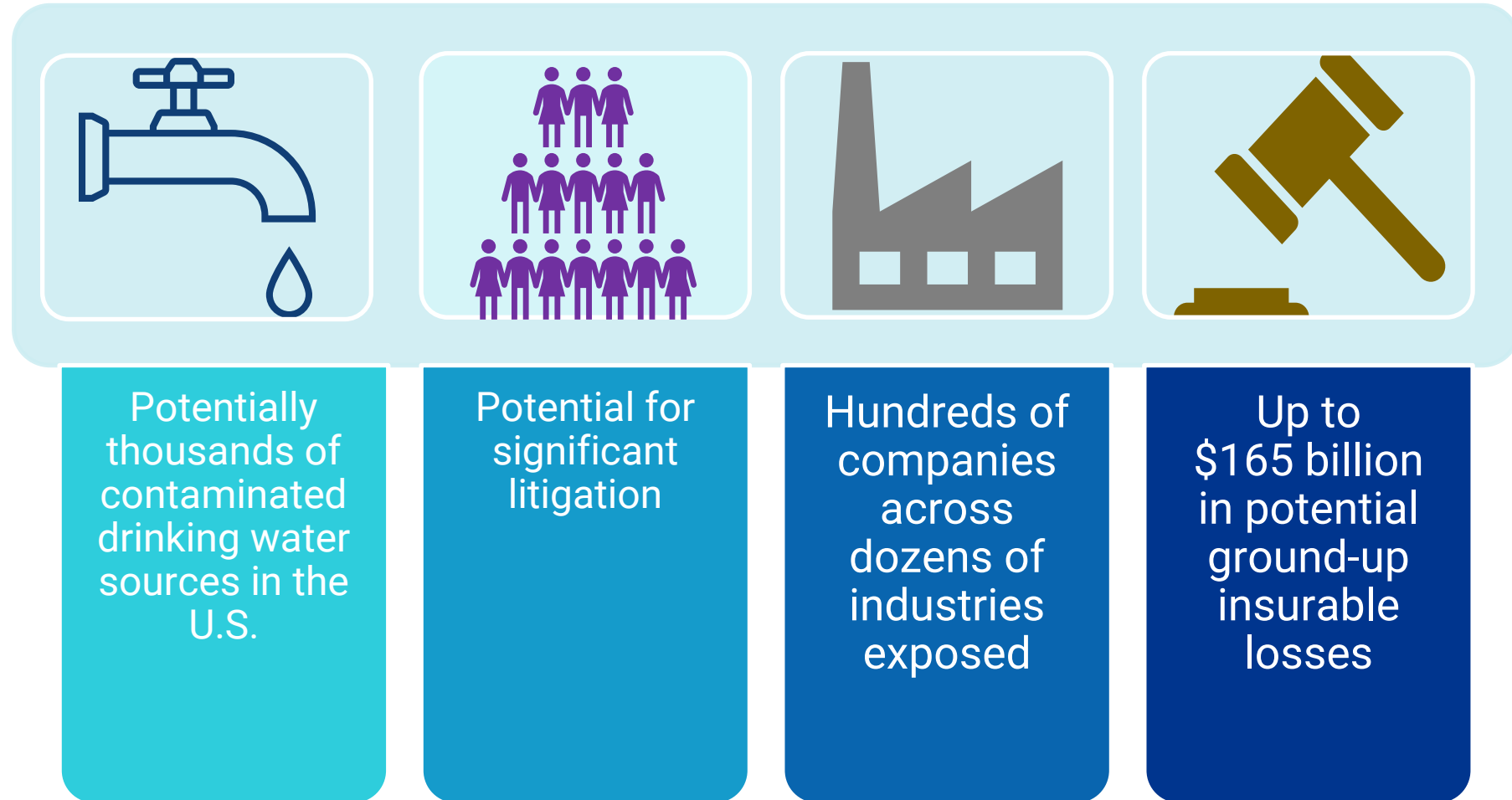


Lucian McMahon, Senior Manager,
Arium Liability Analytics, Verisk



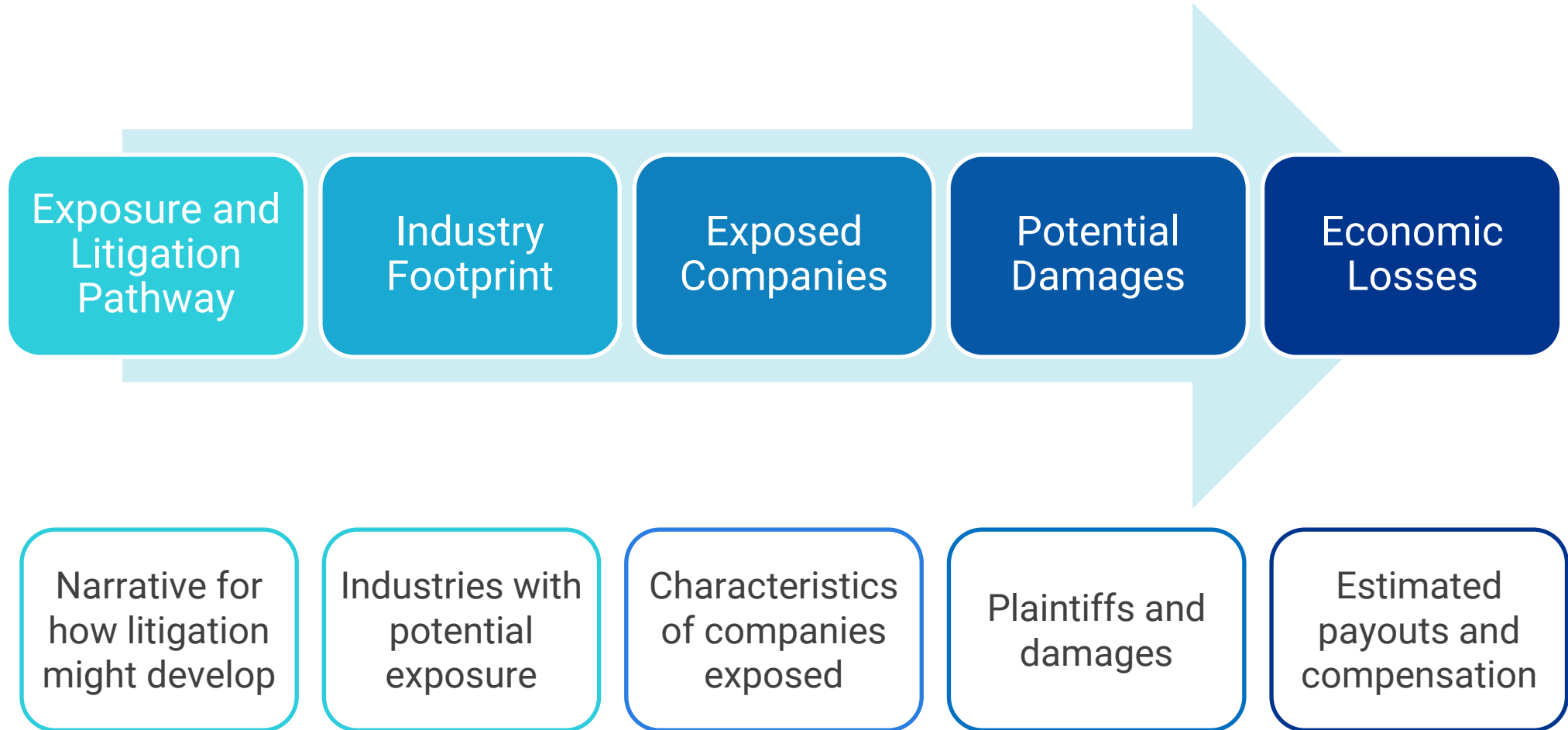
Scoping Arium's PFAS Model

Estimate potential insurable ground-up losses in the U.S. arising out of PFAS-contaminated drinking water and related environmental litigation



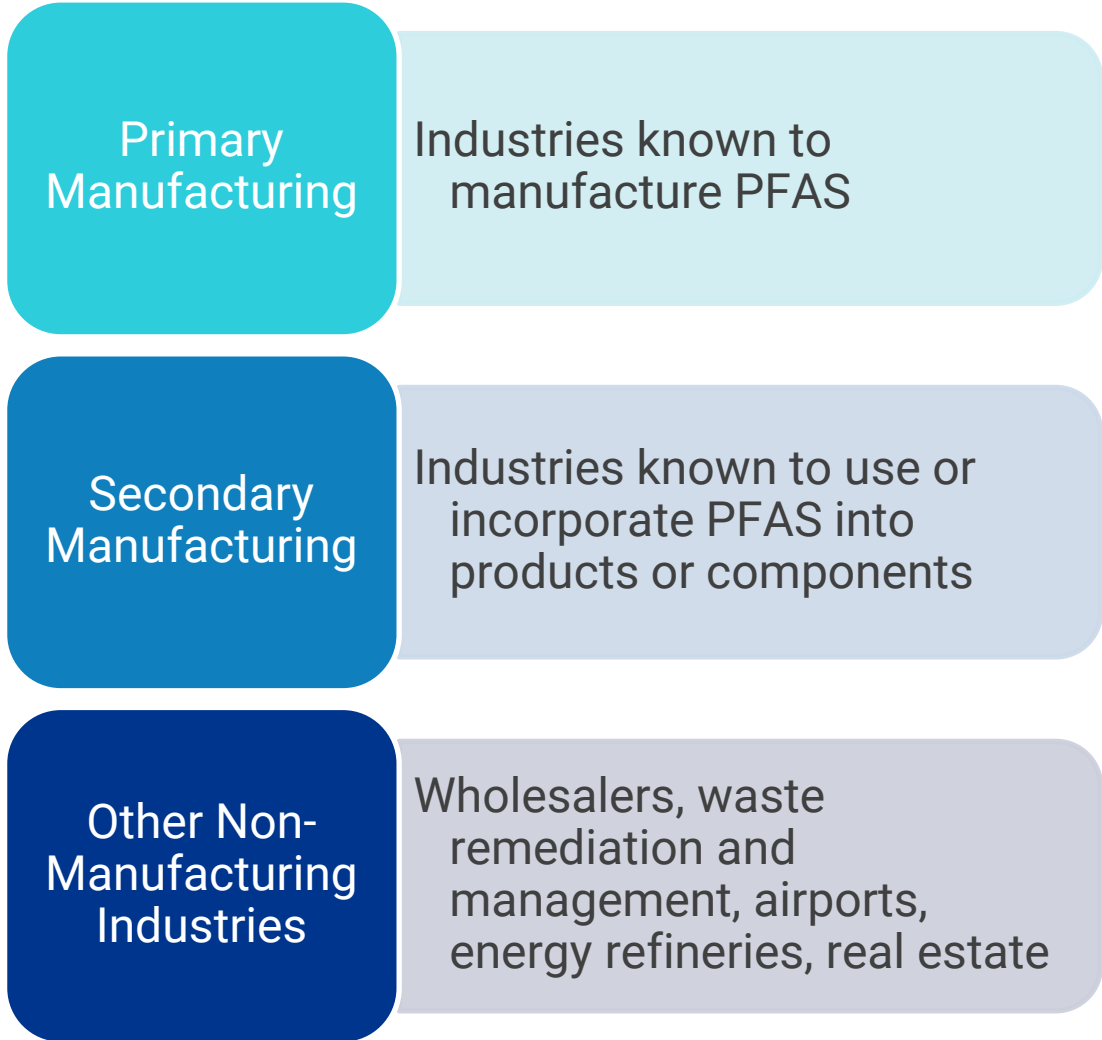
Estimating Liability Event Parameters

Applying a Liability Modeling Framework to a Complex Problem



Industry Footprint and Exposed Companies

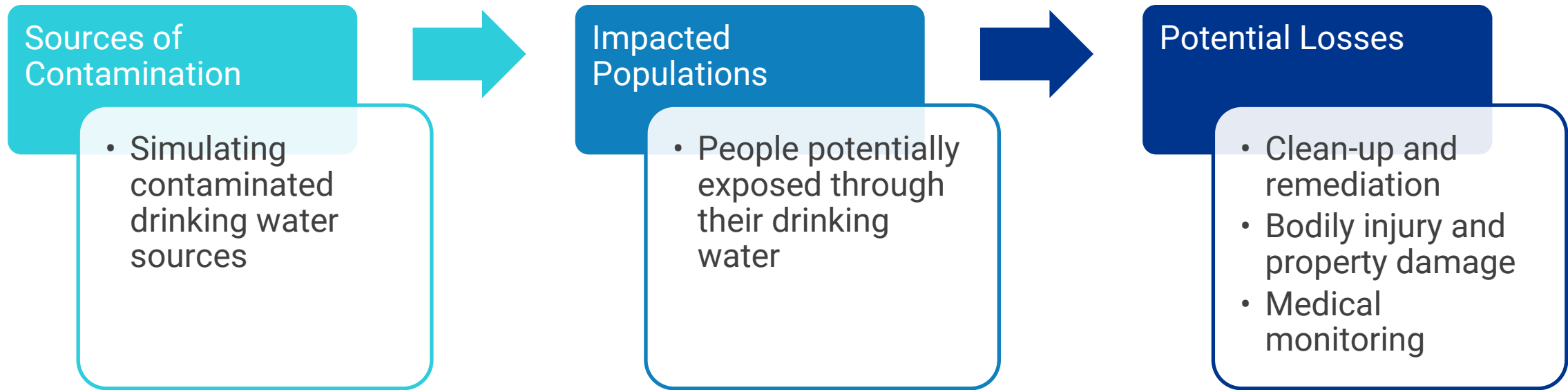
Arium analysis indicates dozens of industries and hundred of companies have potential exposure



Node colors indicate industries within a 2-digit NAICS sector.

Arrow thickness corresponds to strength of trade between industries.

Estimating Potential Losses: Approach and Results



- ***Thousands of water sources are already known to be contaminated.***
- ***Millions of people could have some exposure to PFAS in drinking water.***
- ***Clean-up and remediation alone could lead to tens of billions of potential losses.***



Insurance Industry Implications & Possible Response



Bill Wilt, President, Assured Research



Assured Report

Elections Have Consequences

July 2024

Near term path of PFAS liabilities likely to be influenced by 2024 election



Our Main Points

To be clear, we believe the financial pressures from mass torts generally, and PFAS specifically, will mount during 2024 and the years immediately ahead. The intensity of the near-term pressure, however, seems likely to be influenced by the upcoming presidential election.

- The next ‘asbestos and environmental’ mass torts are already upon us in the form of opioid litigation + PFAS + Talc + Zantac + ...
- The mass tort engine has kicked into high gear and that seems unlikely to change
- But actions by the federal government (and other actors) can supercharge litigation activity; inaction could maintain the status quo for a period of time
- Instructive to consider A&E developments during the 1990s as to developments that could supercharge today’s mass torts



Discussion Topics

- Are we going back to the 1990s?
- Where are other actors on today's mass torts?
- Push back! What about...
- Parting thoughts: elections have consequences



Are we going back to the 1990s?

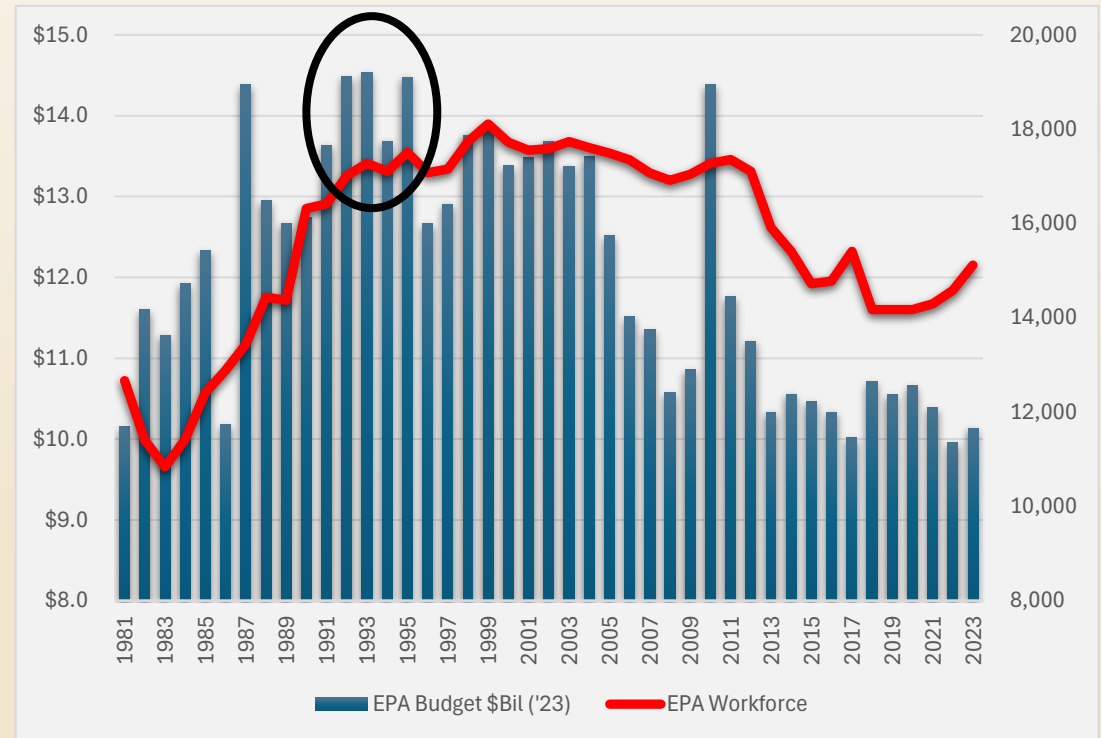
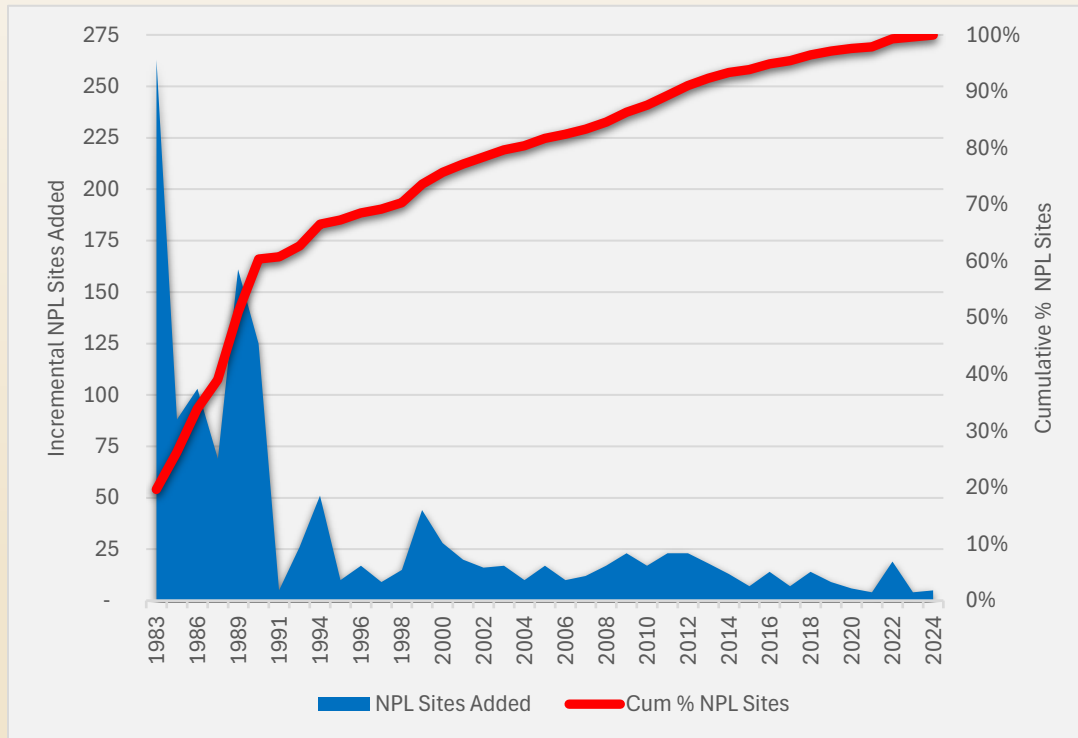
- 1990s presented a perfect storm for the original mass torts – A&E
 - Laws granting the federal government authority to force cleanup were in place: RCRA 1976, CERCLA 1980
 - 1992 Democratic National Platform prominently highlighted environmental goals:
 - *“To protect the public health, we will clean up the environmental horrors at federal facilities, insist that private polluters clean up their toxic and hazardous wastes, and vigorously prosecute environmental criminals.”* DNC Platform 1992
 - An *energetic* director of the EPA was named – Carol Browner
 - *“Young, bright, hard-nosed and a self-proclaimed environmentalist, Browner has the mind and training of an attorney-legislator but the soul of an activist...”* Washington Post, 1992
 - The SEC mandated new disclosures
 - Other actors got involved: rating agencies, actuaries!



Are we going back to the 1990s?

60% of sites on the NPL* were added by 1990. The issue was getting clean ups started.

A surge in the budget and workforce at the EPA catalyzed activity



*NPL = National Priority List, generally sites deemed to be contaminated by hazardous substances

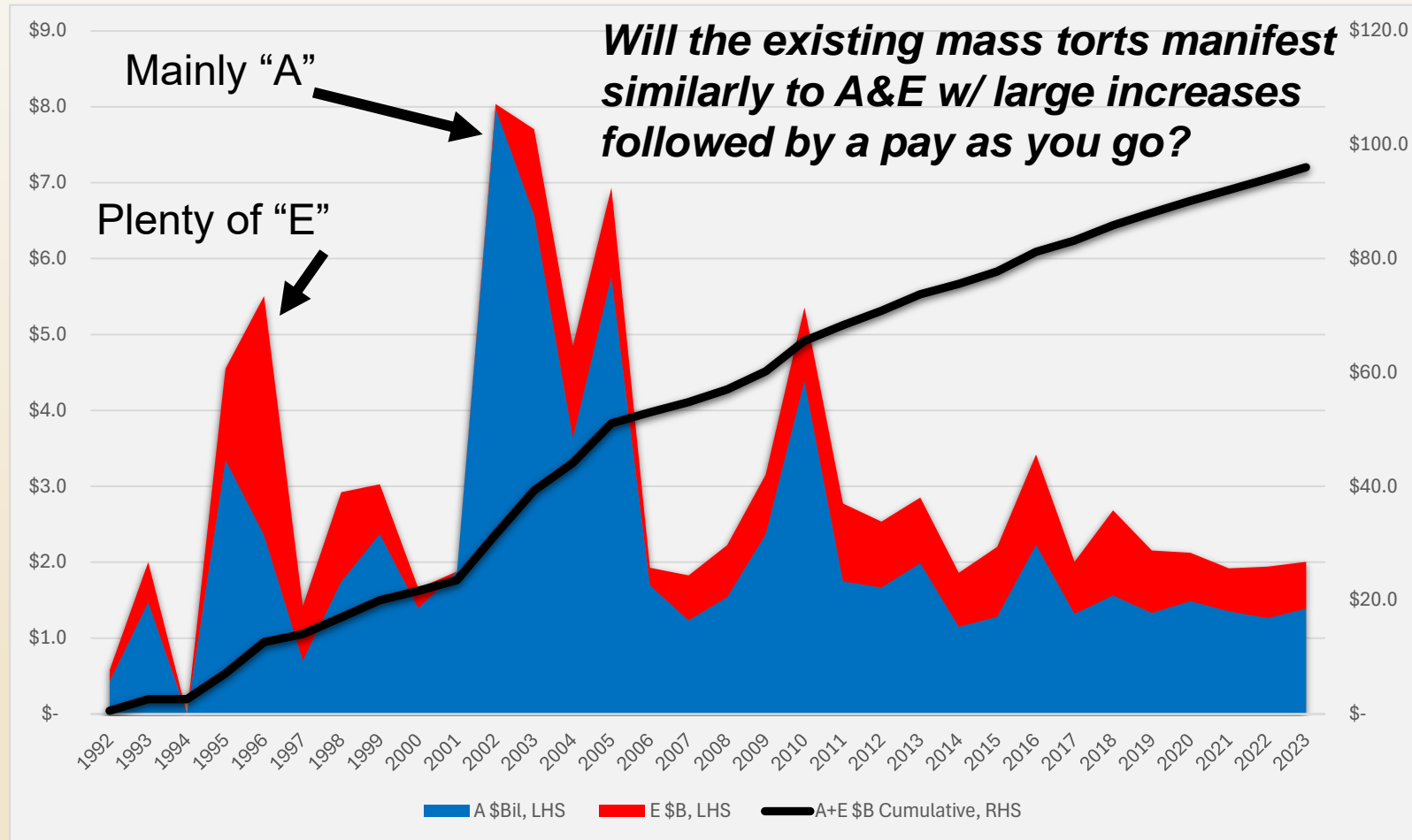


Are we going back to the 1990s?

- Other actors played a major role in events that led to P/C reserve charges
 - SEC promulgated new disclosure rules in 1993 (SAB 92)
 - Required companies to display contingent liabilities on face of B/S separately from potential recoveries from third parties
 - *“While the aggregate numbers concerning potential environmental costs are staggering, what is almost just as frightening is the massive amount of acknowledged environmental cost that has yet to be reflected in corporate financial statements.”*
SEC Commissioner Richard Roberts, Aug. 1993
- Rating agencies published estimated liability ranges and incorporated A&E reserve adequacy into ratings
- NAIC annual statements required disclosure of A&E reserves/incurred losses
- Actuarial papers on quantifying A&E exploded from early '90s to early '00s



Are we going back to the 1990s? Loss Reserve Charges for A&E



The convergence of these many forces resulted in material P/C reserve strengthening for E in the mid 1990s.

By the early '00s the baton was passed back to A as the leading 'toxic tort' driven primarily by private, rather than government, litigants.

Ask us for a comprehensive paper on the topic from January 2001. (We know the author!)



Where are other actors on today's mass torts?

- A: From our perspective, in the *early innings* of taking a stance
- Rating Agencies
 - All have expressed concern
 - PFAS liabilities relevant for rating actions on manufacturers of PFAS
 - We're not aware of *specific* contemplation of today's mass torts in P/C insurance ratings
- NAIC/NCOIL
 - Evidence of discussion topics (in meeting minutes/agenda, working groups, etc.) on climate, cyber, AI, privacy, others...nothing on mass torts.
- Actuarial Profession/Consultants
 - Aware of one substantive paper on quantifying PFAS liabilities
 - From early '90s to early '00s dozens of papers on A&E were published
 - Analytic firm(s) beginning to produce ranges for insurance liabilities
- Insurance Companies
 - Coverage litigation beginning to proliferate
 - Several settlements/coverage disputes in cases of Johnson Controls International and BASF re: AFFF; Phillips International over sleep apnea devices; JNJ disputes over coverage for talc...
 - For investors – rising concern over 'headline risk'

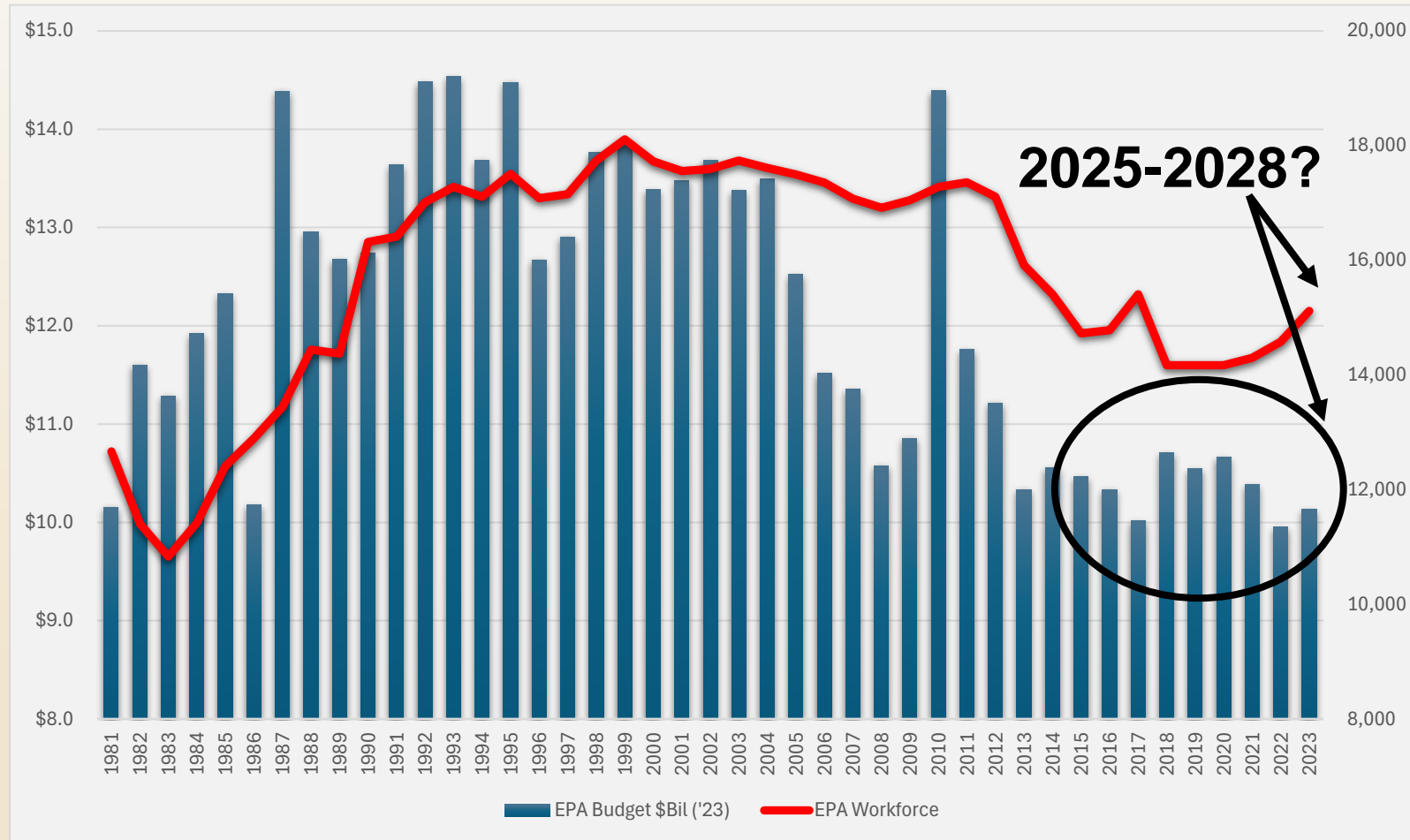


Push back! What about...

- SCOTUS in West Virginia vs. EPA
 - Imposed limits on EPA's ability to regulate greenhouse gas emissions
 - Our view: Different cases! EPA has for decades identified hazardous chemicals, PRPs and enforced remediation
- SCOTUS acceptance of 'major questions' doctrine
 - Says "...courts will presume that Congress does not delegate to executive agencies issues of major political or economic significance." (Wikipedia)
 - The bigger PFAS liabilities become, the more this may become relevant
- Chevron Deference...SCOTUS recently ended
 - Chevron had referred to the latitude given by courts to federal agencies when a dispute arises in their interpretation/enforcement of laws or statutes
 - Ex. Did EPA set drinking water standards so low as to be unmeasurable?
 - Our view: Positive near term for industry. Longer term private legal actions could fill void left by inadequate regulation



Parting Thoughts: Elections Have Consequences



Private actions seem certain to continue ... the mass tort machine is firing on all cylinders.

But actions by the federal government and other actors will play a material role in supercharging, or not, the trends already in place.

Scenario 1: Current administration in place 2025-2028

Scenario 2: A new administration in place

Do you think the role of the EPA will be the same in both scenarios? We don't!

Appendix: Background and Sources



PFAS Background: Emerging Issues

Emerging Issues PFAS Page

- Primer pieces on PFAS
- Regularly updated newsfeed curated by Emerging Issues staff
- Research articles in reverse-chronological order

Emerging Issues Newsletter

- Weekly market intelligence on emerging risks

Questions:


- EmergingIssues@Verisk.com

[Emerging Issues](#)


PFAS

PFAS stands for per- and polyfluoroalkyl substances—a family of thousands of chemicals linked to cancers and other illnesses. Dubbed “forever chemicals” due to their persistence in the environment, PFAS has been widely used for decades in various consumer and industrial products. Verisk’s Emerging Issues team delivers critical market intelligence, empowering property/casualty insurers and risk managers to better navigate these new and emerging risk exposures.

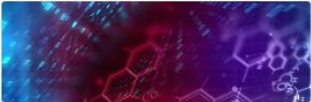
New to PFAS? Start Here




[An Introduction to PFAS for P&C Insurers](#)




[Are PFAS Becoming a Liability Event?](#)



[Liability Modeling Considerations](#)



[\(Webinar\) Trends in PFAS Research](#)



[Mapping Select PFAS Government Activity](#)

Recent Insights

- The U.S. Wants More Chips, Less PFAS. Can It Have Both?**
September 14, 2023 - Building semiconductors requires numerous substances, including PFAS. The U.S. wants to build more chips. Will these hazardous substances follow?
- PFAS Update: Mass Contamination of Drinking Water and a Massive Settlement**
July 21, 2023 - Nearly half of the nation’s tap water is contaminated with PFAS chemicals, according to a U.S. Geological Survey report.

Newsfeed

10/23/2023
PFAS: Maine PFAS Law Gets Global Attention from Businesses (Bangor Daily News) [↗](#)

10/19/2023
PFAS: Researchers Find ‘Ultrashort’ PFAS Compounds in People and Homes (Phys.org) [↗](#)

core.verisk.com/ei

Sources

Slide 4: EPA Primary Drinking Water Regulation

"Per- and Polyfluoroalkyl Substances (PFAS)," Environmental Protection Agency, April 2024.
<https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>

"Chemical Makers Sue Over Rule to Rid Water of 'Forever Chemicals'" Hiroko, Tabuchi, *New York Times*, June 2024.

Slide 5: Other 2024 EPA Actions

"Per- and Polyfluoroalkyl Substances (PFAS)"

"PFAS Enforcement Discretion and Settlement Policy Under CERCLA," Environmental Protection Agency, April 2024.

<https://www.epa.gov/system/files/documents/2024-04/pfas-enforcement-discretion-settlement-policy-cercla.pdf>

Slide 6: PFAS No News Is Good News

"Mixtures of per- and polyfluoroalkyl substances (PFAS) alter sperm methylation and long-term reprogramming of offspring liver and fat transcriptome," Environmental International, April 2024.
<https://www.sciencedirect.com/science/article/pii/S0160412024001636>

"Longitudinal study links PFAS contamination with teas, processed meats and food packaging," Keck School of Medicine of USC, February 2024. <https://keck.usc.edu/news/longitudinal-study-links-pfas-contamination-with-teas-processed-meats-and-food-packaging/>

"Health effects of PFAS exposure through breastmilk largely unknown," Endocrine Today, June 2024.
<https://www.healio.com/news/endocrinology/20240614/health-effects-of-pfas-exposure-through-breastmilk-largely-unknown>

All-cause, cardiovascular disease and cancer mortality in the population of a large Italian area contaminated by perfluoroalkyl and polyfluoroalkyl substances (1980–2018)," Environmental Health, April 2024. <https://link.springer.com/article/10.1186/s12940-024-01074-2>

"Respiratory Exposure to Highly Fluorinated Chemicals via Application of Ski Wax and Related Health Effects," Current Environmental Health Reports, January 2024.
<https://link.springer.com/article/10.1007/s40572-023-00425-4>

"Elevated levels of serum per- and poly-fluoroalkyl substances (PFAS) in contact lens users of U.S. young adults," Chemosphere, February 2024.
<https://www.sciencedirect.com/science/article/pii/S0045653524000274>

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"The association between per- and polyfluoroalkyl substances (PFASs) and brain, esophageal, melanomatous skin, prostate, and lung cancer using the 2003–2018 US National Health and Nutrition Examination Survey (NHANES) datasets," Heliyon, January 2024.

"Researchers find 'forever chemicals' in English otters," Phys.org, June 2024.
<https://phys.org/news/2024-06-chemicals-english-otters.html>

"New Study Confirms Forever Chemicals Are Absorbed Through Skin," Science Daily, June 2024. <https://www.sciencedaily.com/releases/2024/06/240624125549.htm>

Slide 7: PFAS Removal: The Cleanup Begins

"Innovative PFAS remediation kicked-off at USAG Ansbach airfield," U.S. Army, April 2024.
https://www.army.mil/article/275373/innovative_pfas_remediation_kicked_off_at_usag_ansbach_airfield

"Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances— Version 2 (2024)," Environmental Protection Agency, April 2024.
<https://www.epa.gov/system/files/documents/2024-04/2024-interim-guidance-on-pfas-destruction-and-disposal.pdf>

"Forever chemicals cleanup feasible, costly, and complex," Bloomberg, June 2024.



Thank you!

Questions?

Contact us:

emergingissues@verisk.com

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