Lux Research BlueTech RESEARCH

WEBINAR

The Commercial Future of Water: Microplastics, PFAS & Consumer Trust

PRESENTERS:

Cheryl Auger
Senior Director at Lux Research

Ali Ling, Ph.D.
Assistant Professor at University of St. Thomas

Jacob Steele
Senior Research Analyst at BlueTech Research

Agenda

1 **Opening and framing:** why consumer trust is the “ultimate currency” in the water economy

2 **From BlueTech Research:**
State of the market: Technology and regulatory perspective

3 **From Lux Research:**
Consumer trust and perception: Insights from anthropology and AI-enabled research

4 **Discussion**
Connecting the dots: Where tech meets consumer demand

What is “safe” drinking water?

Eliminated fecal-oral diseases in many countries

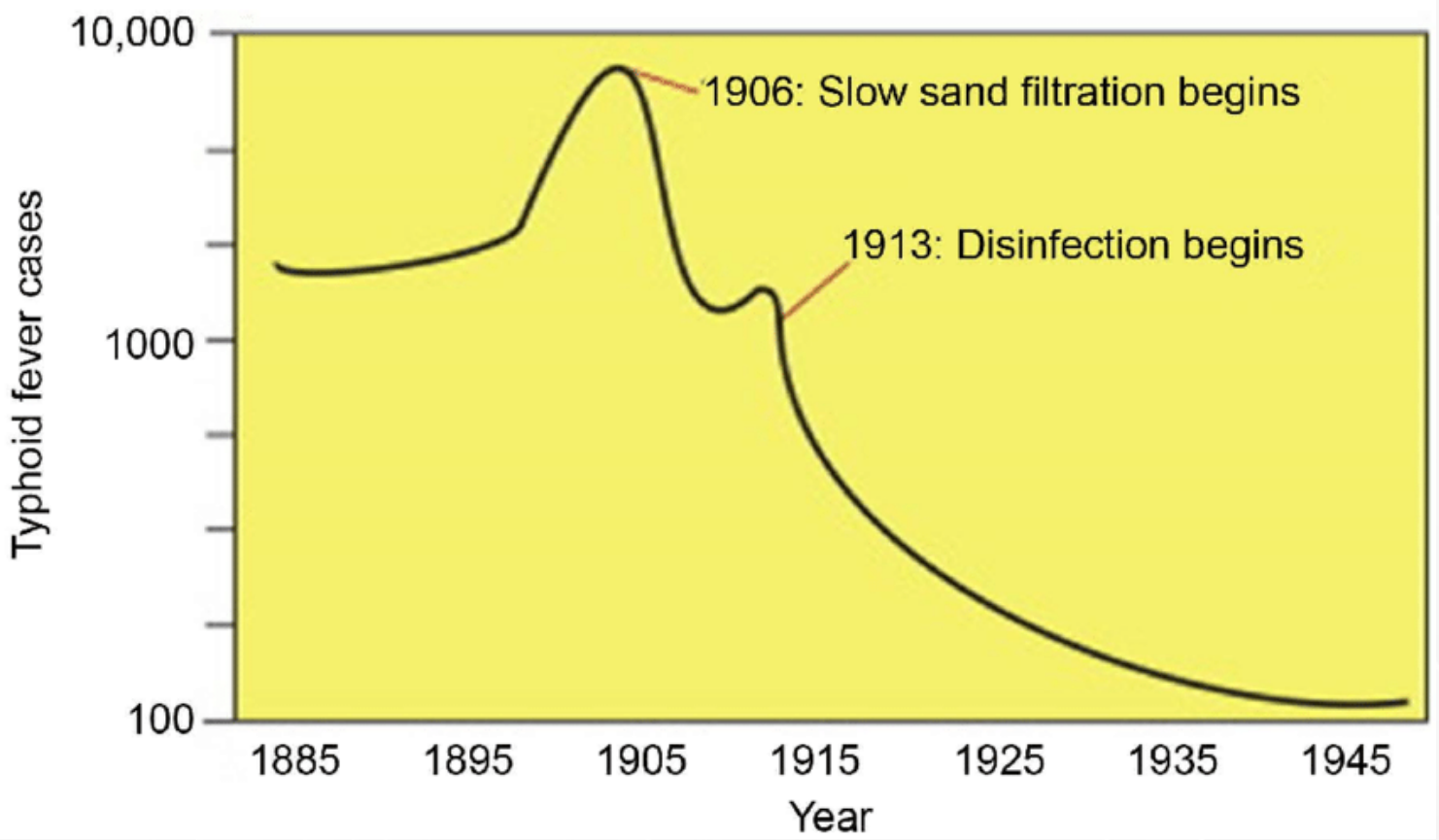
- Disinfection and sanitation
- Enables high-density communities
- Saves lives

Drinking water regulations

- Targets contaminants
- Passed before infrastructure aging became a big problem

Needs “safe and reliable”

- It doesn’t matter how safe if it doesn’t make it to the tap
- U.S.: USD 625 billion deficit over the next 20 years to maintain



Why distrust and what are the consequences?

Local events drive widespread concerns

- Lead in Flint, MI
- Service failures in Jackson, MS
- PFAS in specific communities

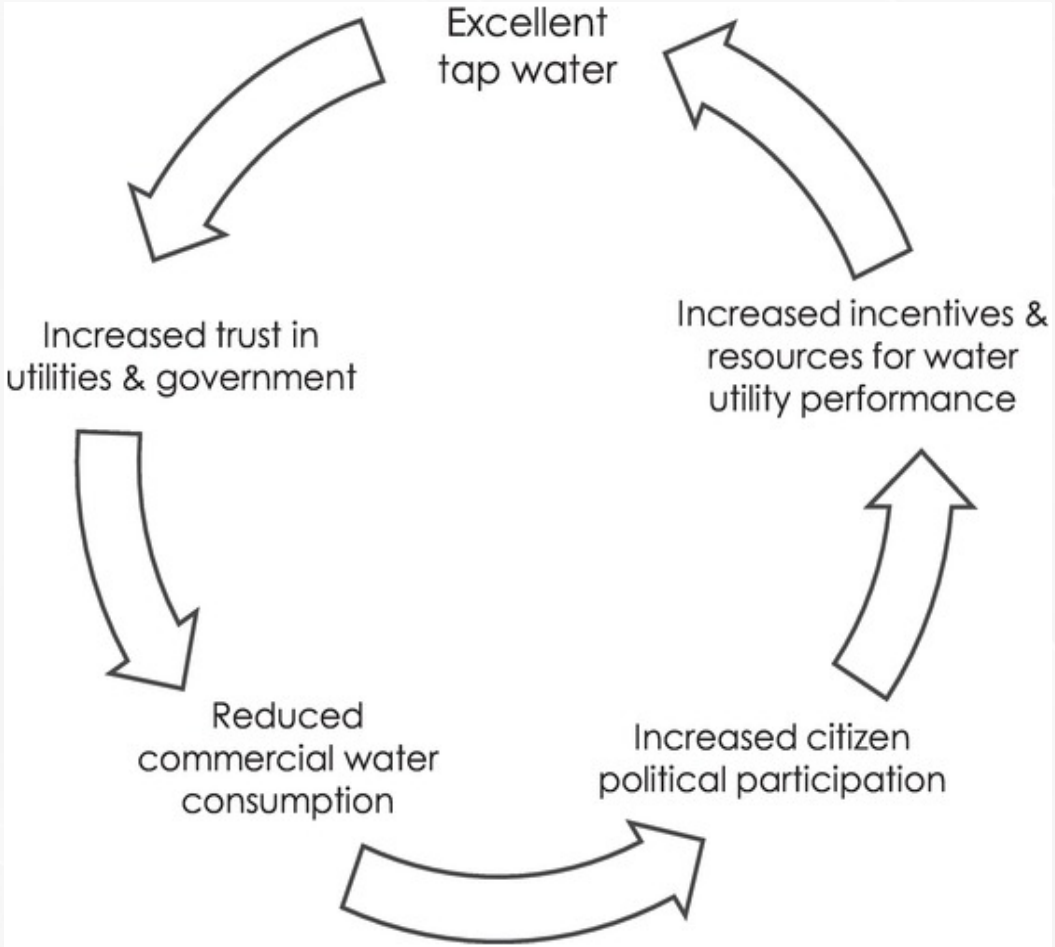
Drinking water tied to trust in government

- Distrust in water tied to distrust in government
- Any failures lead to disconnection and mistrust
- Difficult to secure funding to maintain infrastructure

Reubilding trust requires investment and excellence

- Communication and building trust

Figures from Manny Teodoro, *The Profits of Distrust*

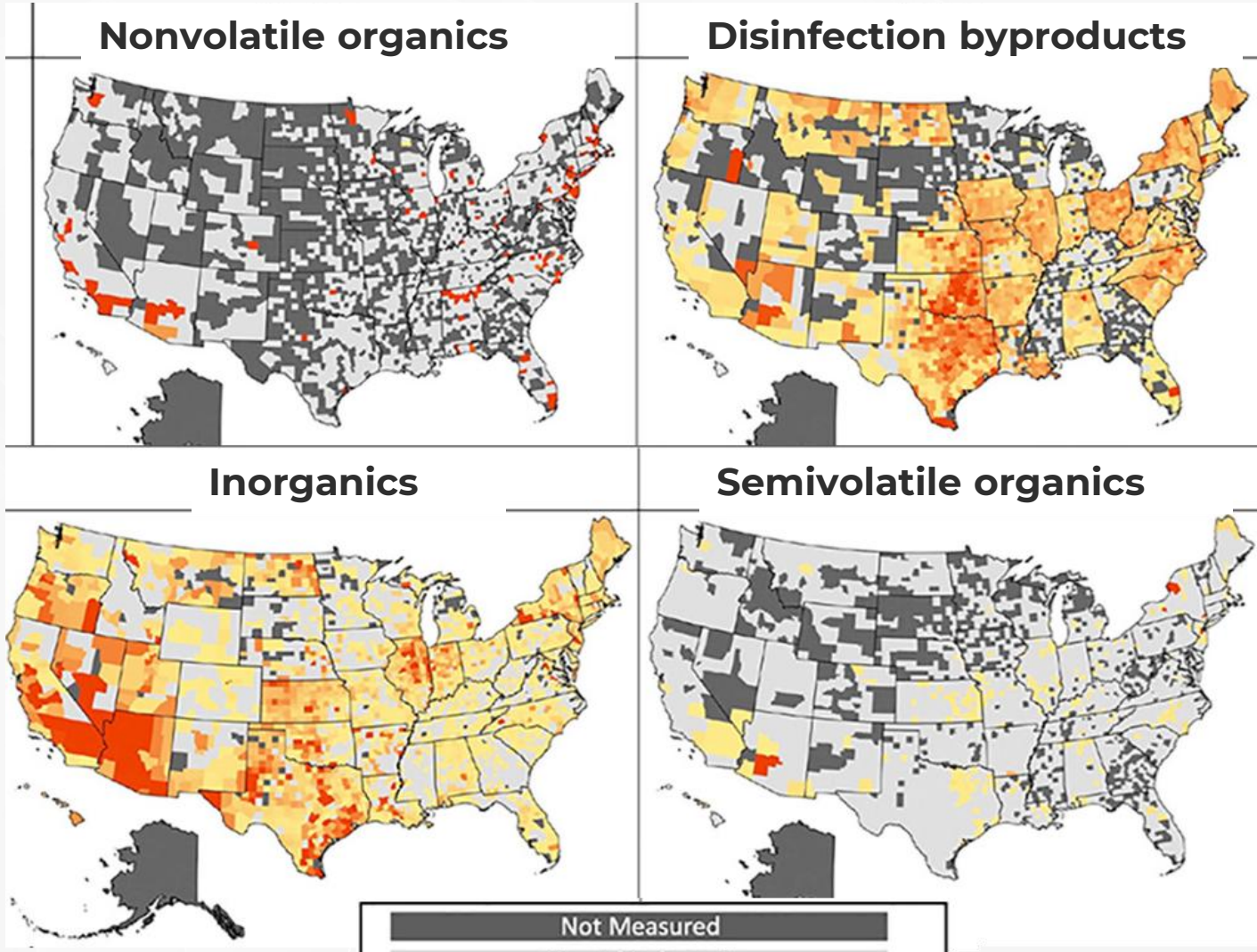


Drinking water quality very localized

Local events drive widespread concerns

Actual water quality issues vary widely by community

- Inorganics like lead, arsenic, chromium-6
- Disinfection byproducts
- PFAS
- Other organics (pesticides, solvents, etc.)

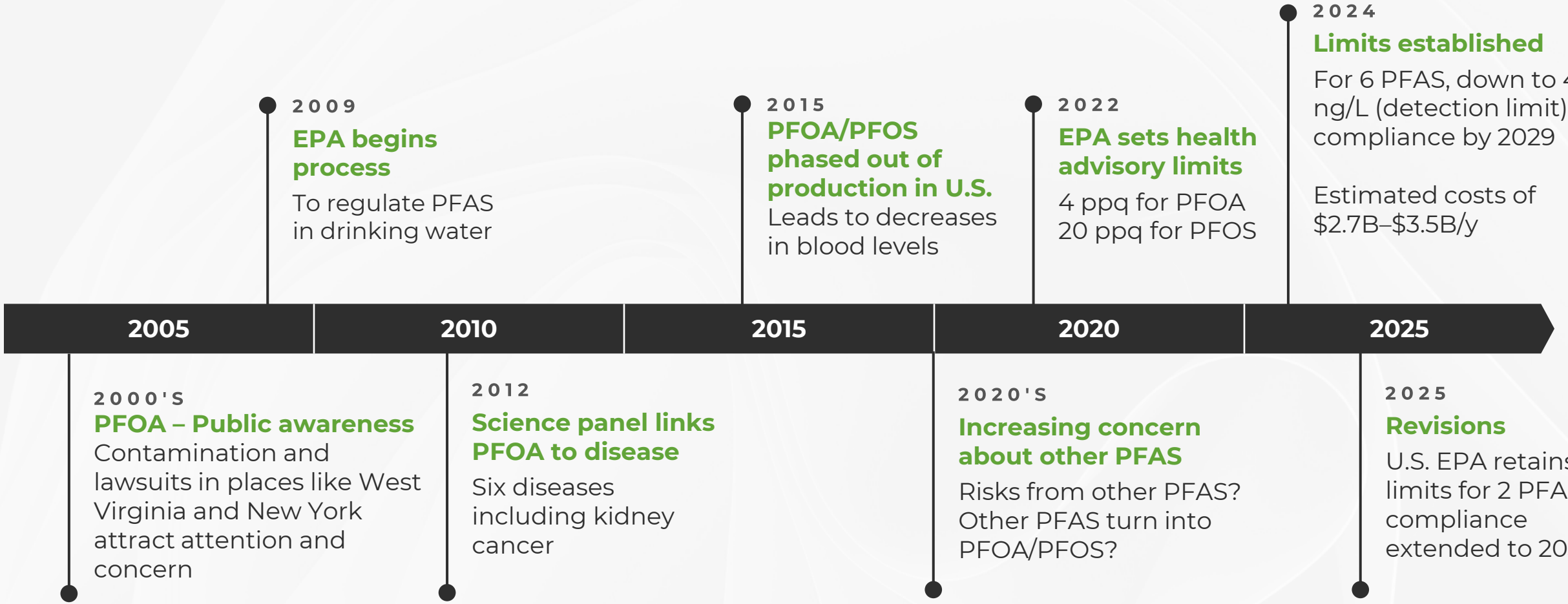


Rosenblum et al. 2024 Prioritization and Risk Ranking of Regulated and Unregulated Chemicals in US Drinking Water. *Ecotoxicology and Public Health*. 58 (16).

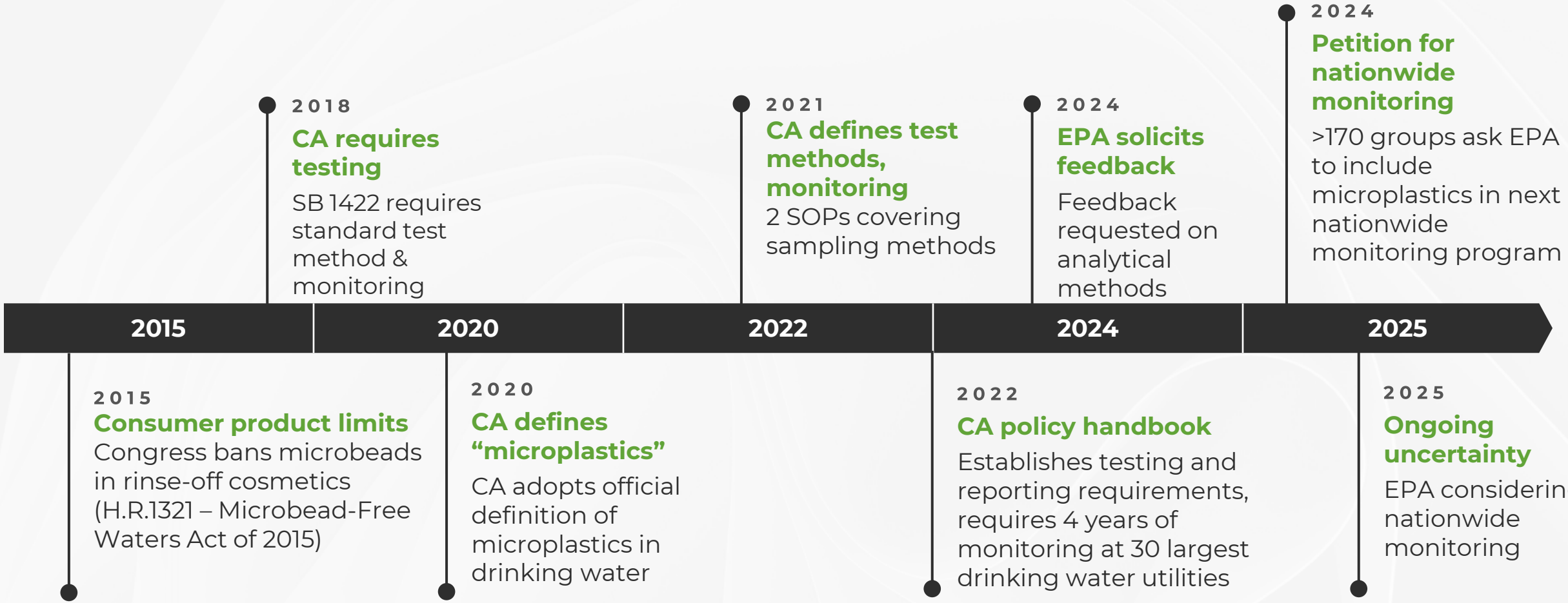
Advanced drinking water technologies

	Reverse Osmosis Membranes	Granular Activated Carbon Adsorption	Advanced Oxidation	Oxidation + Biofiltration
Technology description	Physically separates nearly all contaminants	Sticks tocontaminants, needs to be changed regularly	Chemical destruction of most contaminants	Less intensive chemical breakdown, then biological
In-home unit available?	**YES**	**YES**	**NO**	**NO**
PFAS	★★★★☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Microplastics	★★★★★	★★★★☆	★★★★☆	★★★★☆
Inorganics	★★★★★	★★★☆☆	★☆☆☆☆	★★☆☆☆
Other organics	★★★★☆	★★★★☆	★★★★★	★★★★★

PFAS in U.S. drinking water



Microplastics in U.S. drinking water



>$800M raised by PFAS treatment companies

Venture Capital

- PFAS destruction technologies as the current gold rush
- PFAS sensing/analysis technologies as the pick and axe?

The Real $$$?

- U.S. drinking water utilities projected to spend $2.7B–$3.5B/y to meet PFAS regulations, primarily on concentration/removal tech like activated carbon absorbent, anion-exchange resins, and reverse osmosis membrane treatment
- Increased consumer spending on filtration & bottled water due to mistrust of public drinking water

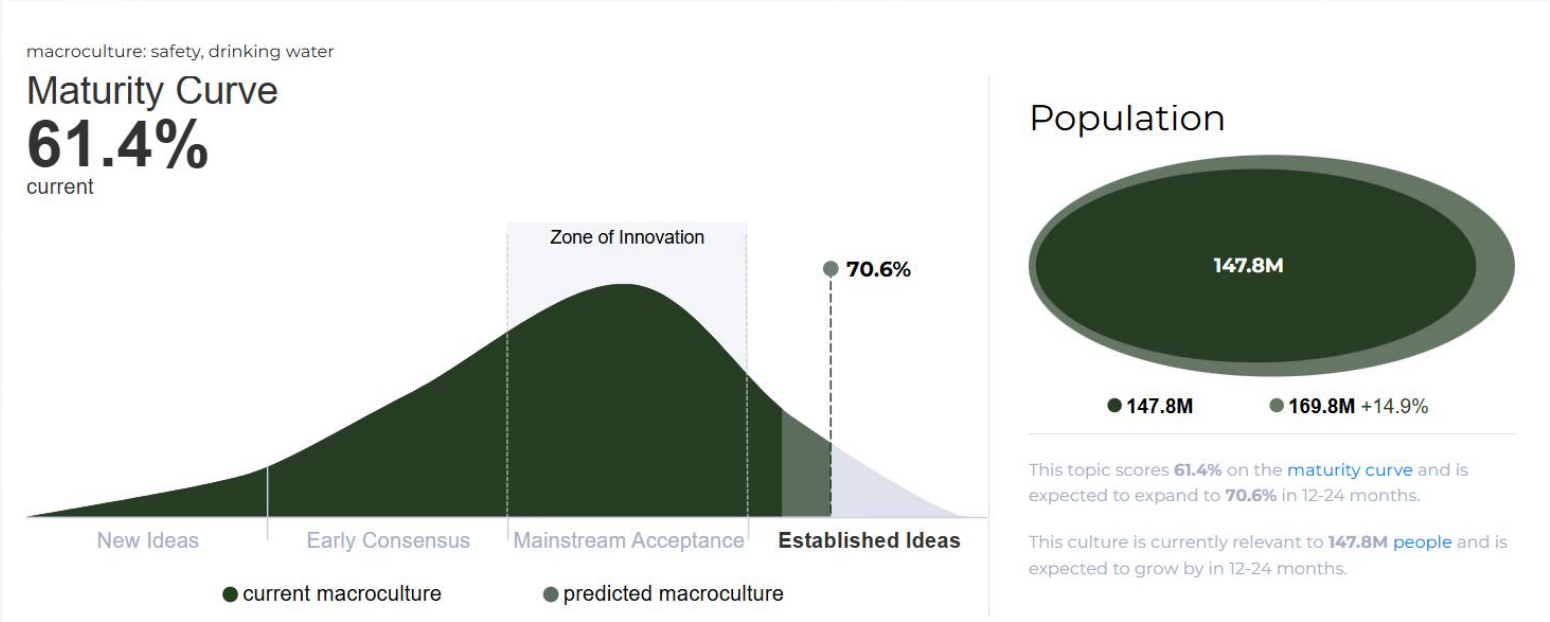
Water at the crossroads: Trust demands more than safety alone

For consumers, trust in water means it's safe to drink, supports health, and tastes good

- Consumers expect their water will not make them sick, but trust in water is also about cleanliness and purity.
- Water has become a symbol of wellness, linked to mental clarity, detox, clear skin, and weight management.
- Consumers value water that tastes neutral, fresh, and soft — free from chemical or metallic notes — as these qualities signal purity, safety, and enjoyment.

What is “safe” drinking water for consumers?

- Though safety is table-stakes, there’s a gap in public trust.
- Despite safety standards, many worry about health risks associated with contaminated tap water.
- There is friction between trust in public systems and the need for individual action to guarantee water safety.



Drinking water safety is a mainstream concern.

CONSUMER PERSPECTIVE

Tiny particles, big problems: The microplastic challenge

Concerns span personal health risks, environmental impact, and trust in both bottled and tap water

- Anxiety over the health implications of ingesting microplastics fuels skepticism.
- Plastic waste is symbolically linked to pollution, with consumers viewing bottles as a key source of microplastics.
- Growing interest in sustainable alternatives like reusable or biodegradable options as well as at-home filtration.

The PFAS blame game

Consumers blame industry and lack of government regulation for PFAS in drinking water, leading to questions about safety

- Consumers associate PFAS with various health risks, including endocrine disruption, immune system effects, and potential links to cancer.
- Fears about PFAS prompt consumers to seek regular testing and treatment options to ensure their tap water is safe.
- Consumers hold manufacturers, regulators, and water suppliers responsible for contamination and want stricter regulations, advanced filtration, and greater transparency.

From trust to control: Why consumers take water safety into their own

Skepticism, safety concerns, and sustainability tradeoffs shape how consumers choose water

- **Adoption of filtration systems:** Consumers are turning to home filters like reverse osmosis or carbon systems to remove contaminants, improve taste, and regain control over water quality.
- **Increased bottled water consumption:** Despite environmental concerns, many consumers choose bottled water for its perceived purity, taste, and marketed safety over tap water.
- **DIY water enhancements:** Consumers customize water with natural flavors or electrolyte powders to boost taste and health benefits.

Key Takeaways

1 **Consumer concerns don’t always align with real risks.**

- Should water utilities cater more to consumer concerns?
- Can we help consumers better understand real risks?

2 **Distrust in drinking water drives market and profits for in-home water treatment and bottled water.**

- What is the role of these companies if utilities don’t meet challenges?

3 **Opportunity exist for innovations that solve both regulatory/risk and consumer-driven challenges.**

- An example is PFAS regulations.

Considerations and costs for consumers' water quality options

Excellent Municipal Water

Cost

USD 0.0005–USD 0.01/L

USD 50–USD 1,300/household/y

Other Issues

Easier to reuse and recycle materials

Under Sink Water Filtration

Cost

USD 0.005–USD 0.05/L

USD 150–USD 500/household/y

Other Issues

Homeowner needs to regularly maintain and replace units

Difficult to reuse components

High company markups

Bottled Water

Cost

USD 0.30–USD 1.00/L

USD 500–USD 1,700/household/y

Other Issues

Not regulated as strictly, quality not necessarily better than municipal water

Plastics: more materials use and waste

Most of costs to company to for water

THANK YOU

VISIT

www.luxresearchinc.com

EMAIL

questions@luxresearchinc.com

VISIT

www.bluetechresearch.com/

EMAIL

aling@stthomas.edu

jacob.steele@bluetechresearch.com

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questions@luxresearchinc.com