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# From Molecules to Regulation: What are Per - and Polyfluoroalkyl Substances (PFAS) and Why Should You Care?

Presented by: Tim Sowecke



Member

**LexMundi**  
World Ready

# Presenter: Tim Sowecke



- Tim Sowecke, Attorney, Crowe & Dunlevy
- Environmental and Energy litigation and regulatory compliance
- \*Subsequent information should not be understood as, or considered a substitute for, specific legal advice. For inquiries, please contact Tim Sowecke, or another licensed attorney.
- \*\* PFAS regulatory landscape is changing fast!
- For more on PFAS, consider checking out three podcasts I've done on this topic, available here: <https://www.crowedunlevy.com/brieflylegal/>
  - *Forever Chemicals: What They are and What is being Done to Minimize Their Impact* (May 26, 2021).
  - *PFAS Regulatory Update: EPA Issues Updated Drinking Water Health Advisories* (June 29, 2022).
  - *PFAS Regulatory Update: EPA Proposes PFAS Hazardous Substance Designation* (September 28, 2022)

# Roadmap

- **PFAS Headlines!**
- **What are PFAS?**
- **Regulatory Nexus**
- **Response Measures – What to do?**

# Headlines: Read All About It!

< THE WALL STREET JOURNAL AA

## Maine Farmers Dump Milk, Lose Crops as Forever Chemicals Taint Soil

Long-lasting toxins, traced to sludge spread years earlier as fertilizer, are linked to types of cancer



## Wisconsin AG Sues 18 Companies Over PFAS Contamination

Wisconsin Attorney General Josh Kaul has filed a lawsuit seeking to hold nearly 20 companies liable for allegedly contaminating the environment with a group of chemicals known as PFAS.

By [Associated Press](#) | July 20, 2022, at 2:56 p.m.



## Water Utilities Fear Loss Of Biosolids Land Disposal Due To PFAS Limits

July 11, 2022

Tweet



## »» What are Per- and Polyfluoralkyl substances (“PFAS”) ?

- »» Class of synthetic compounds developed in the 1930s at 3M and Dupont, and used in countless industrial and consumer applications
- »» After WWII, Dupont commercialized perfluorooctanoic acid (PFOA) into the product the company branded “Teflon”
- »» 3M commercialized its own PFAS chemical perfluorooctane sulfonate (PFOS), which they commercialized and branded “Scotchguard”
- »» Broad class of 5,000+ chemicals
- »» Short- and long-chains of carbon with fluorine attached = VERY STRONG
  - »» Strong chemical bonds
  - »» Hydrophobic (repels/does not mix with water)
  - »» Lipophobic (“afraid of fat” – not soluble in lipids)
  - »» Oleophobic (“afraid of oil” – property of being repelled from oil)
  - »» Wide use in industrial and consumer products resistant to water, heat, and stains

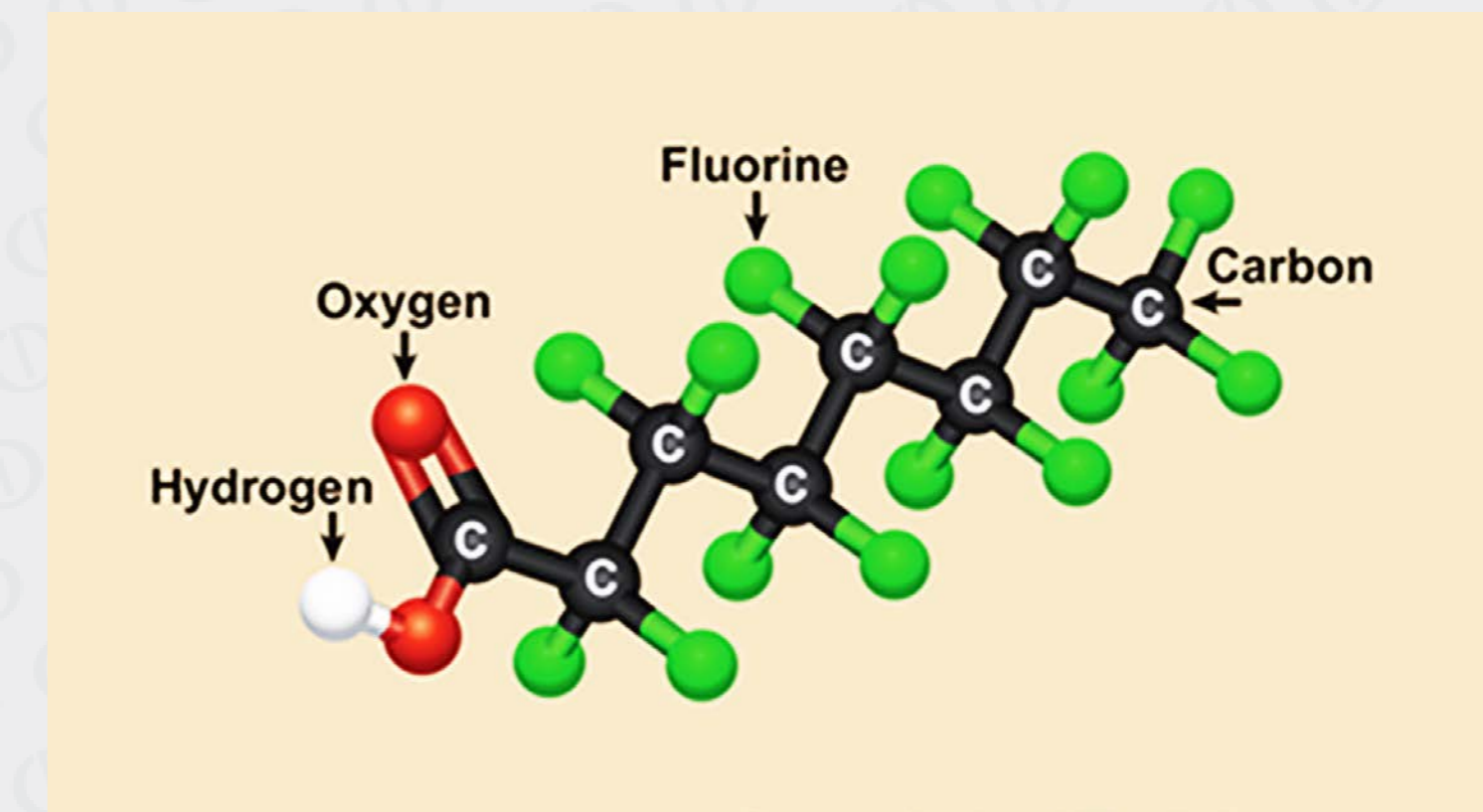


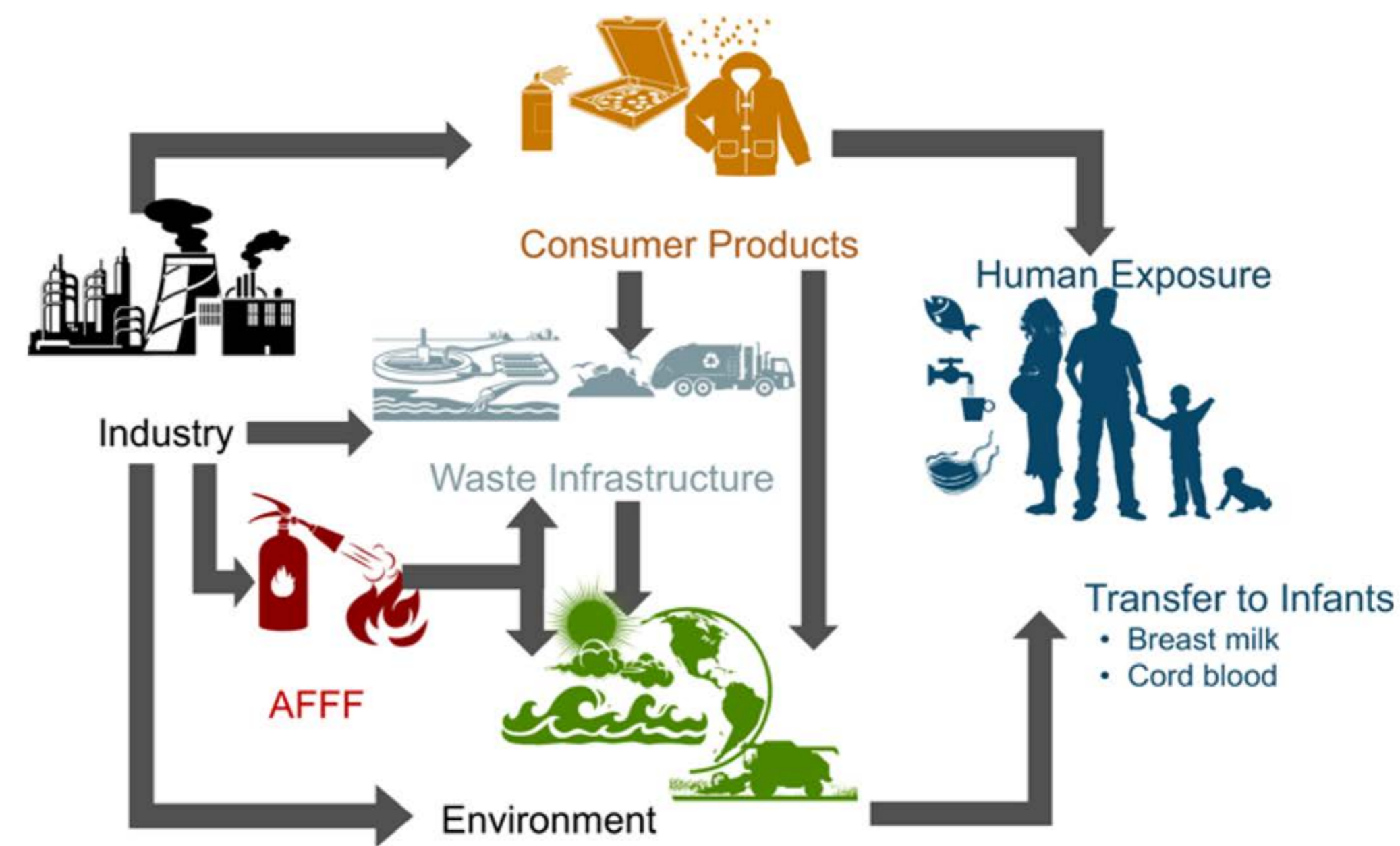
Image from National Institute of Environmental Health and Sciences,  
<https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm>



## » What are PFAS? (cont.)

These same qualities that give PFAS such a high utility for industrial and consumer applications, also make them highly persistent and mobile in the environment and human body, hence the nickname, “Forever Chemicals.”


The nerdy regulatory acronym being used for these and other similar substances is Persistent, Bioaccumulative, Toxic (PBT).



**Figure 1** from Sunderland et al. (2019) *Journal of Exposure Science & Environmental Epidemiology* 29(2). doi:10.1038/s41370-018-0094-1

## » Toxicology:

- According to EPA, current peer-reviewed scientific studies have shown that exposure to certain levels of PFAS may lead to:
  - Reproductive effects such as decreased fertility or increased high blood pressure in pregnant women.
  - Developmental effects in children, including low birth weight, accelerated puberty, bone variations, or behavioral changes.
  - Increased risk of some cancers, including prostate, kidney, and testicular cancers.
  - Reduced ability of the body's immune system to fight infections, including reduced vaccine response.
  - Interference with the body's natural hormones.
  - Increased cholesterol levels and/or risk of obesity.
- Considerable uncertainty:
  - There are thousands of PFAS with potentially varying effects and toxicity levels, yet most studies focus on a limited number of better known PFAS compounds.
  - People can be exposed to PFAS in different ways and at different stages of their life.
  - The type and uses of PFAS change over time, which makes it challenging to track and how exposure to these chemicals occurs and how they affect human health.



# Regulatory Nexus



# » Groundwork to Regulate PFAS

## Prior Regulatory Efforts

- a. Safe Drinking Water Act require that once every five years EPA issue a new list of unregulated contaminants, and in 2012 under UCMR 3, EPA identified six PFAS .
- b. May 2016 EPA issued estimated lifetime drinking water level of 70 parts per trillion (“ppt”) to provide Americans with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water. The health advisory level is not a regulation, but is designed to give state, local, tribal governments information they need to better protect human health and environment
- c. February 2019, EPA Action Plan “describes the EPA’s approach to identifying and understanding PFAS, approaches to addressing current PFAS contamination, preventing future contamination, and effectively communicating with the public about PFAS,” including
  - i. Evaluate need for maximum contaminant level (MCL) for perfluorooctanoic acid (PFOA) and pefluorooctane sulfonate (PFOS);
  - ii. Beginning necessary steps to propose designating PFOA and PFOS as “hazardous substances” through one of the available federal statutory mechanisms, e.g., CERCLA, RCRA, TSCA, CWA, CAA.

# » Groundwork to Regulate PFAS (cont'd)

## Prior Regulatory Efforts (cont.)

- b. February 2019, EPA Action Plan “describes the EPA’s approach to identifying and understanding PFAS, approaches to addressing current PFAS contamination, preventing future contamination, and effectively communicating with the public about PFAS,” including (cont.)
  - iii. Develop groundwater cleanup recommendation for PFOA and PFOS at contaminated sites;
  - iv. Develop toxicity values or oral reference doses for various PFAS;
  - v. Develop new analytical methods and tools for understanding and managing PFAS risk;
  - vi. Promulgate significant new use rules under the Toxic Substances Control Act that require EPA notification before chemicals are used in new ways that may create human health and ecological concern, and in some instances ban the use or import of such chemicals;
  - vii. Use enforcement actions to help manage PFAS risk.
- c. December 2019: Validated method for testing certain PFAS in drinking water, EPA method 533 (December 2019) to include multiple short-chain PFAS that cannot be measured by Method 537.1



# » Regulatory Nexus

- » March 3, 2021, EPA published its Final Regulatory Determination, in which it determined:
  - » Two most widely used, studied, and regulated PFAS thus far:
    - » Perfluorooctanoic acid (PFOA); and
    - » Perfluorooctane Sulfonic acid (PFOS)
  - » That PFOA and PFOS may have adverse health effects;
  - » **That PFOA and PFOS occur in public water systems (PWSs) with a frequency and at levels of public health concern; and**
  - » Specifically, EPA noted the following health effects caused by PFOA and PFOS:
    - » Development effects to fetuses during pregnancy or to breast-fed infants;
    - » cancers (e.g., testicular, kidney);
    - » Immune effects (e.g., inhibits antibody production and immunity);
    - » other effects, including cholesterol changes.

- » October 18, 2021 EPA Publishes its “PFAS Strategic Roadmap” – outlines coming regs.
- » **Other targets for regulation:**
  - Ongoing nationwide monitoring for PFAS in drinking water (Ongoing)
  - Establish a national primary drinking water regulation for PFOA and PFOS (proposed rule in Fall 2022 and final rule in Fall 2023)
  - Restrict PFAS discharges from industrial sources through Effluent Limitations Guidelines (ELGs) (2022)
  - Leverage National Pollution Discharge Elimination System (NPDES) permitting to reduce PFAS discharges to waterways. (Winter 2022)
  - Publish updated PFAS analytical methods to monitor drinking water (Fall 2024)
  - Publish final recommended ambient water quality criteria for PFAS (Expected Winter 2022 and Fall 2024)
  - Propose to designate certain PFAS as CERCLA hazardous substances (Spring 2022 and final rule Summer 2023)



# » Safe Drinking Water Act

- » May 2016 EPA issued estimated lifetime drinking water level of 70 parts per trillion (“ppt”) to provide Americans with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water. **The health advisory level is not a regulation**, but is designed to give state, local, tribal governments information they need to better protect human health and environment.
- » June 15, 2022, EPA issued updated health advisories for four different PFAS:
  - Perfluorooctanoic Acid (“PFOA”) = 0.004 ppt
  - Perfluorooctane Sulfonate (“PFOS”) = 0.02 ppt
  - GenX chemicals, i.e., replacement for PFOA = 10 ppt
  - Perfluorobutane Sulfonate (“PFBS”) = 2,000 ppt
  - **THIS IS VERY LOW!** For PFOA and PFOS, below detectable limits.
  - BUT, in tune with EPA PFAS Strategic Roadmap, and strong signal that EPA will promulgate final binding regulations under the SDWA, expected in Fall 2023.



## » Comprehensive Environmental Response Compensation and Liability Act, (CERCLA) or Superfund Act.

- a. On September 6, 2022, EPA published a proposed rule to designate two PFAS – PFOA and PFOS – as hazardous substances under the Superfund Act.
- b. 60 days for comment on the proposed rule (comments due on or before November 7, 2022).
- c. Broad Implications:
  - Any release of a reportable quantity of 1lb. In 24-hour period.
  - Requires Dept. of Transportation to regulate PFOA and PFOS as hazardous materials under DOT regulations, e.g. pipeline, trucking.
  - Property valuations, transfers, due diligence (e.g., Phase I Environmental Assessments).
  - Will give EPA and private parties the ability to cleanup up PFOA and PFOS on certain properties and recover compensation from potentially responsible parties (e.g., past and present owners, operators, and arrangers).
  - Strict Liability – no finding of “fault” is necessary.
  - Joint and Several liability – any potentially responsible party could be held accountable for entire cost, even if other entities responsible.



## » What are States Doing

- a. Many states have begun the process of regulating PFAS in drinking water and have adopted enforceable standards or Maximum Contaminant Levels (MCLs) for PFAS in their state.
  - i. While Oklahoma is not one of those states, recently, during the current 2021 legislative session, proposed SB 622, to establish the “Oklahoma PFAS Waste Act”.
    1. Defining PFAS and PFAS Waste
      1. “Waste containing high concentrations of PFAS that is generated at facilities using PFAS in the production of products other than PFAS.” {Emphasis added}.
    2. Exemptions for consumer and industrial products that incidentally contain PFAS and that are routinely discarded through municipal waste streams
    3. Oklahoma Dept. of Environmental Quality agency to adopt rules and regulate the receipt, storage, treatment and disposal of PFAS Waste
    4. Storage, treatment, and disposal will be protective of human health and the environment
    5. Generator of PFAS waste is responsible for safe and proper disposal of the waste.
    6. No quantified limits.



## » What are States Doing (cont'd)

- a. Many states have also legislated prohibitions against “intentionally adding” PFAS, or otherwise banning certain consumer goods containing PFAS.
  - » Focused on manufacturers of PFAS and intentional users of PFAS.
  - » For example, in July 2021 Maine banned PFAS in nearly all products, stating that as of Jan. 1, 2030, “a person may not sell, offer for sale, or distribute for sale” in Maine products where PFAS has been “intentionally added” except in cases of “unavoidable use.” 38 M.R.S. § 1614.
  - » Under the Maine law, “‘Intentionally added PFAS’ means PFAS added to a product or one of its product components to provide a specific characteristic, appearance or quality or to perform a specific function. The plain language of the statute shows that the PFAS must be intentionally added and furthermore have a specific function within the product.
  - » Similarly, Colorado in 2022, passed a law establishing a regulatory scheme that prohibits the sale or distribution of certain products that contain intentionally added PFAS, with a phase-out schedule, manufacturer reporting, and requirements for labeling of cookware that contains PFAS. See HB22-1345.



## » What are States Doing (cont'd)

- a. Many states have begun the process of regulating PFAS in drinking water and have adopted enforceable standards or Maximum Contaminant Levels (MCLs) for PFAS in their state. (cont.)
  - iii. California = 5.1 ppt for PFOA (Notification) and 6.5 ppt for PFOS (Notification).
  - iv. Michigan = 8 ppt for PFOA (MCL).
  - v. Washington = 10 ppt for PFOA (Notification).
  - vi. New York = 10 ppt for PFOA and PFOS (MCL).
  - vii. New Jersey = 14 ppt for PFOA (MCL).
  - viii. Minnesota = 15 ppt for PFOS (Guidance).
  - ix. Massachusetts = 20 ppt for six PFAS: PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA (MCL).
  - x. Vermont = 20 ppt for five PFAS: PFOA, PFOS, PFHpA, PFHxS, and PFNA (MCL).
  - xi. Maine = 20 ppt for six PFAS: PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA (Notification).
  - xii. Nevada = 667,000 ppt for PFOA and PFOS (Guidance).







# Response Measures – What to do?



# Consumers and Businesses

# » What Should Consumers be Doing?

## » Know what you are putting on and in your body.

Review household goods and consumer products – will not always be clear!

### » E.g., Peaslee, et al., *Fluorinated Compounds in North American Cosmetics*, Environmental Science and Technology Letters (June 15, 2021).

- “Only 8 percent of the 231 cosmetics screened for total fluorine had any PFAS listed as ingredients, and only 3 percent of the 29 cosmetics in which targeted PFAS were measured has any PFAS listed as ingredients.”
- “No PFAS in Cosmetics Act” introduced in the US House and Senate, June 15, 2021.

### » E.g., Out with the Teflon, be wary of nonstick cookware

- Until 2013 Teflon was produced using Perfluorooctanoic acid (PFOA); be skeptical of replacement fluoropolymers.
- If you must use nonstick, cook in well-ventilated area; purchase from reputable companies with transparent supply chain; hand wash pots with nonabrasive scrubber; non-metal utensils.
- Ditch the nonstick for cast iron (antique or enameled), stainless steel, ceramic and stoneware

### » Water filters: We have seen particular efficacy at residential and commercial scale from Granular Activated Carbon.



## » What Should Businesses be Doing?

- a. Because of prevalence of products containing PFAS and inevitable wave of federal and state regulations, businesses must take proactive steps to identify PFAS in business:
  - i. Are you a source of PFAS? Conduct facility-wide inventory of chemicals, which should include evaluation of Safety Data Sheets (SDSs) and review of supply chains and sourcing:
    - 1. Conduct facility-wide inventory for PFAS and PFAS-containing products;
    - 2. Are there other sources in the area that may be the actual source, e.g., emissions, groundwater contamination, soil migration;
    - 3. Does your site pose an exposure risk through drinking water, aquifers, surface waters?
- b. Consider removal and replacement, other forms of mitigation of PFAS and PFAS-containing products ASAP to avoid costly compliance very costly enforcement.
- c. Check your wastewater discharges.



# » What Should Businesses be Doing?

## C. Check insurance coverage

- i. Because of pollution exclusions, coverage more likely under pre-1986 policies
- ii. Cover claims for property damage and bodily injury
  - 1. Environmental claims are generally considered claim for property damage
- iii. Duty to defend is broad and generally requires carrier to defend as long as there is potential for coverage

## d. If you receive any type of order or request from an agency, contact a good environmental regulatory attorney and enlist the right environmental consultant

- i. Negotiate response with entity issuing order
  - 1. Compliance dates
  - 2. Locations to be investigated
  - 3. Number of sampling point
  - 4. What kinds of samples? e.g. shallow soils, deeper soils, groundwater.
  - 5. Analytical methods?



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# What Can Cities Do?

## » What Can Cities Do?

- a. Because of the prevalence PFAS and inevitable wave of federal and state regulations, Cities must take proactive steps to identify PFAS in facilities:





## » What Can Cities Do? (cont.)

- » Identify probable sources, mostly water treatment facilities and properties where hx wastewater treatment sludge application, brownfields, and other City properties where hx manufacturing, e.g., coatings, surfactant fluids, and conduct investigations and monitoring programs.
  - Get knowledgeable environmental regulatory attorneys involved to protect communications and guide investigation.
- There are funds available from Federal and State agencies for facilities upgrades.



# THANK YOU



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