Per- and Polyfluoroalkyl Substances (PFAS):
Update on regulatory and scientific developments from a National Perspective

For AHMP

April 23, 2020

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Overview and Agenda

1. Introduction of PFAS
2. Scientific Developments and Status
3. Regulatory and Legislative Activities
   - ✓ PFAS activities in general
   - ✓ AFFF-specific trends
4. Other efforts worth tracking
5. Conclusions and considerations

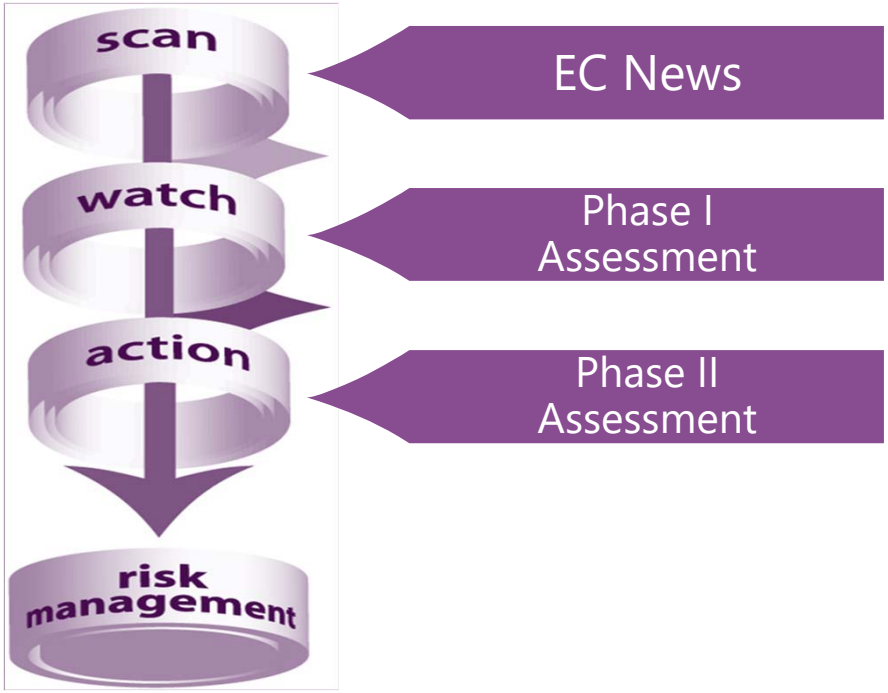
Wood – Our PFAS Focus

Introduction and Background

What is an emerging contaminant?

US DoD and EPA definitions generally state:

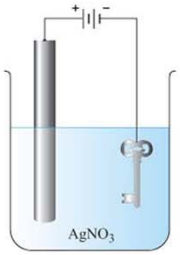
- Presents potential unacceptable risk
- Has no published standard
- New science, detection, or exposure pathway available[1,2, 3]



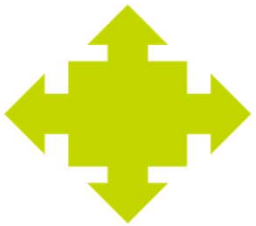
DoD Instruction 4715.18, *Emerging Contaminants*, June 11, 2009. DUSD (I&E) is Deputy Under Secretary of Defense for Installation and Environment
EPA Federal Facilities Restoration and Reuse Office:
http://www.epa.gov/fedfac/documents/emerging_contaminants.htm#additional_ec
http://toxics.usgs.gov/regional/emc/

What are PFAS and where are they used?

Oil and Gas Extraction

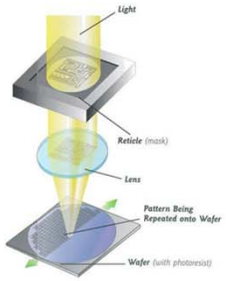


Electroplating
(mist suppressants)



Manufacturing Processes/
Intermediates/ By-products

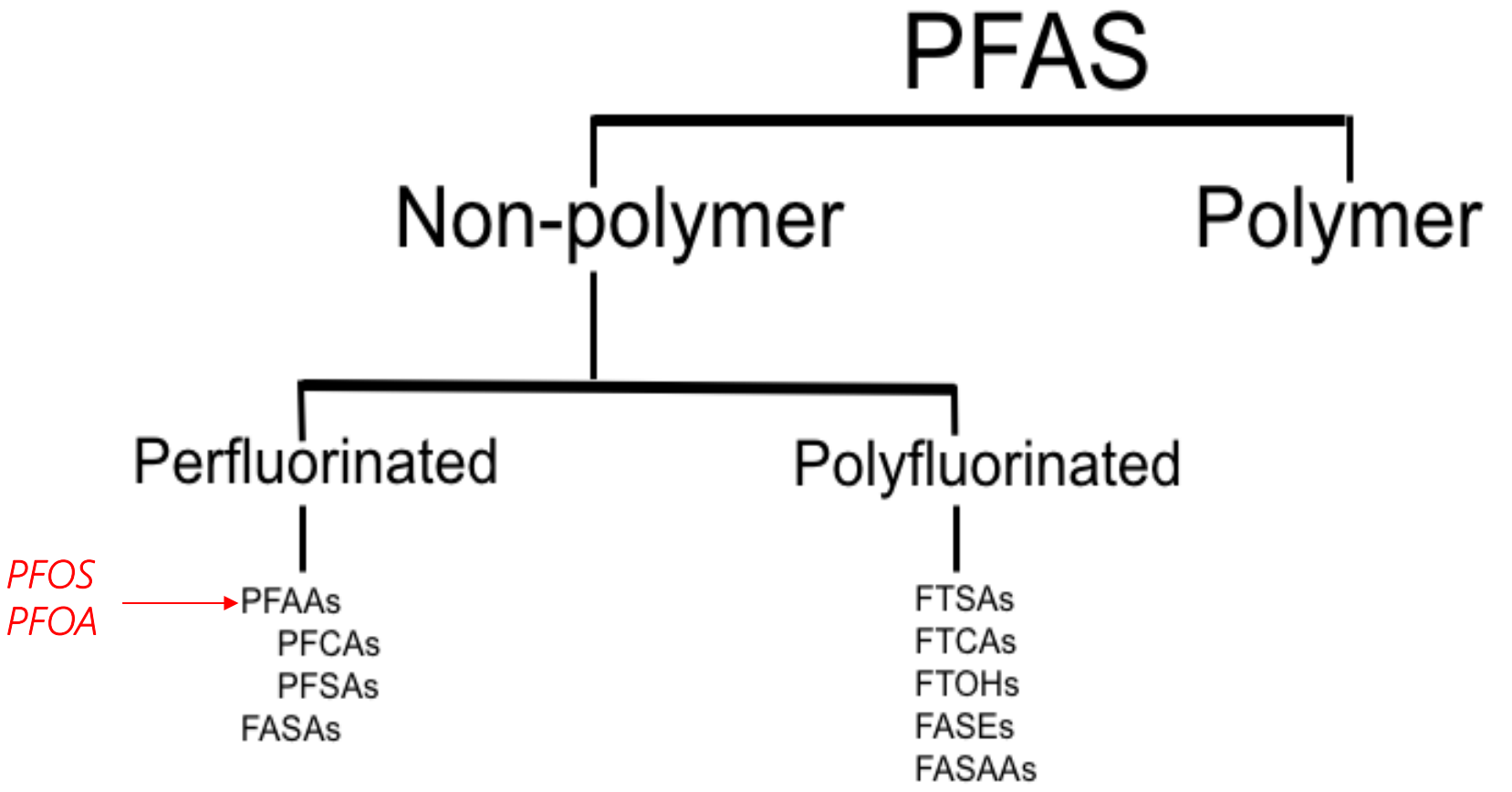
Consumer Products



Semiconductor
Industry

Aqueous film forming
foams

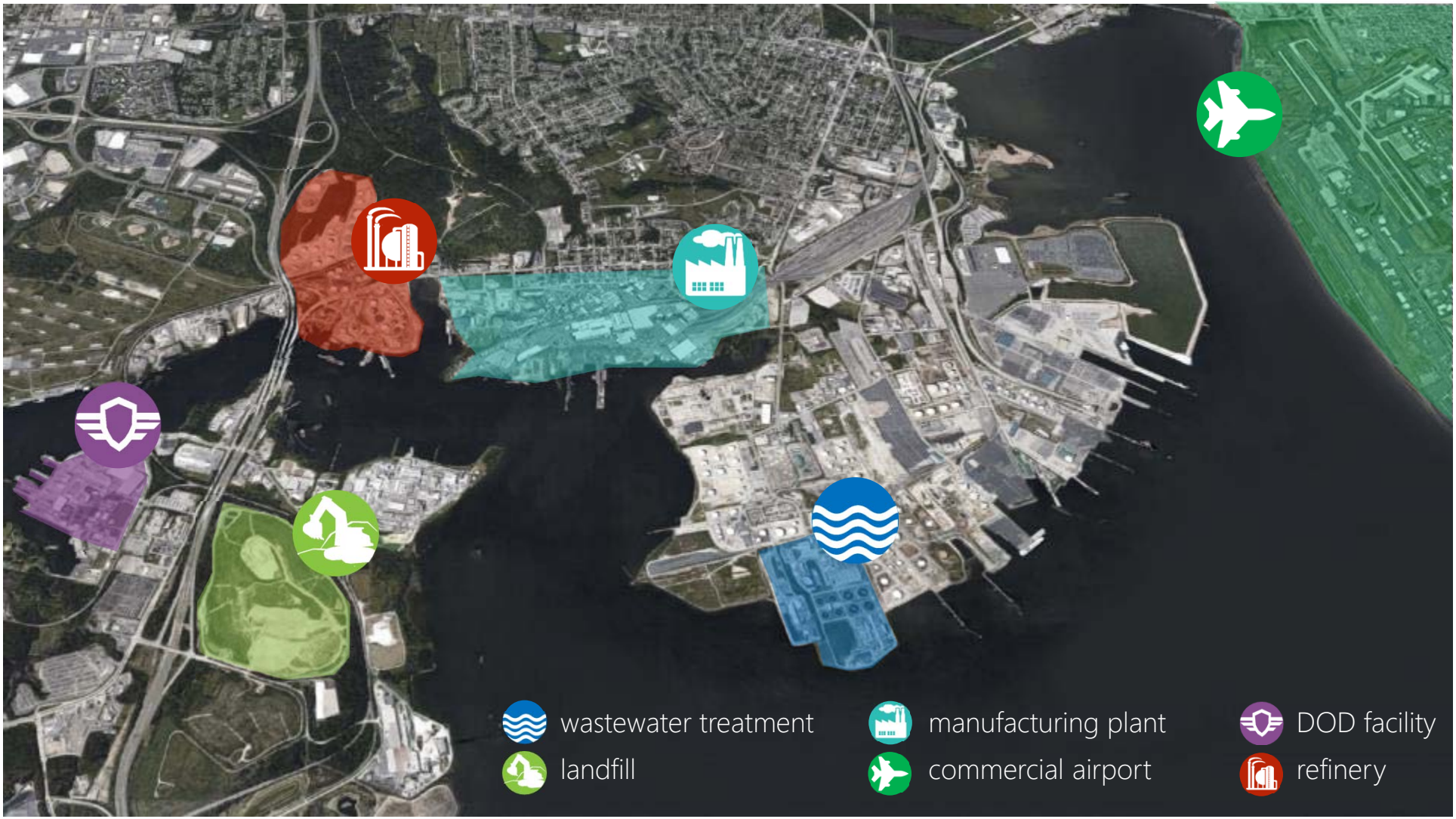
General classes of PFAS



Interstate Technology & Regulatory Council (ITRC). 2018. Naming Conventions and Physical and Chemical Properties *PFAS Fact Sheets*. https://pfas-1.itrcweb.org.

Scientific Developments and Considerations

The Big Picture



Regulatory and Legislative Activities

Common themes

1. PFAS criteria –number of individual PFAS
2. Legislative activity and model bills
3. Product Stewardship and Supply Chain Evaluations
4. Potential Regulatory Compliance Shifts
5. AFFF and transition to F3
6. Surface water/surface foam

Example PFAS Criteria – US Water Standards

Location	Type	PFOA	PFOS	Other PFAS
USEPA	DW	0.070	0.070	
	GW	0.400	0.400	
Alaska (AK)	**GW**	**0.400**	**0.400**	
	DW/GW/SW	0.070	0.070	
California (CA)	DW	0.0051	0.0065	
Colorado (CO)	**GW**	**0.070**	**0.070**	
Connecticut (CT)	DW/GW	0.070	0.070	3
Delaware (DE)	GW	0.070	0.070	
	GW	0.070	0.070	1
Indiana (IN)	**Protected GW**			1
Iowa (IA)	**Protected GW**	**0.070**	**0.070**	
	Non-protected GW		**1**	
Maine (ME)	GW	0.400	0.400	1
Massachusetts (MA)	**DW/GW**	**0.02**	**0.02**	**3**
Michigan (MI)	**SW**	**0.420**	**0.011**	
	DW/GW	**0.070**	**0.070**	
	DW	0.009	0.008	0
Minnesota (MN)	DW/GW	0.035	0.015	2
	DW/GW	-	0.015	
Montana (MT)	**GW**	**0.070**	**0.070**	
Nevada (NV)	DW	0.667	0.667	1
New Hampshire (NH)	**GW**	**0.012**	**0.015**	2
New Jersey (NJ)	**DW**	**0.014**	**0.013**	
North Carolina (NC)	**GW**	**2**		1
Ohio (OH)	**DW**	**0.070**	**0.070**	**2**
Oregon (OR)	**SW**	**24**	**300**	1
Pennsylvania (PA)	GW	0.070	0.070	
Rhode Island	**DW/GW**	**0.070**	**0.070**	
Texas (TX)	**GW**	**0.290**	**0.560**	14
Vermont (VT)	**DW/GW**	**0.020**	**0.020**	3
	GW	**0.010**	**0.010**	3

NOTABLES

- USEPA value is an Advisory – not legally enforceable
- More than 20 states have some form of water criteria, over 70% in the last 2 years
- Nearly half of the states have adopted EPA Lifetime Health Advisories
- CA and MI with lowest proposed criteria
- **Promulgated legally enforceable rules in over half states**
- **Brand New (Dec. 2019) Promulgated legally enforceable standard**
- Over 75% states have adopted criteria for other PFAS
- Trend to add PFAS analytes together and compare to criteria.
- 8 States currently with pending regulations/guidance

NOTES –ug/L or ppb
DW= drinking water
GW= groundwater
SW= surface water

FOR MOST RECENT UPDATES, GO TO https://pfas-1.itrcweb.org/fact-sheets/

PFAS criteria by media

Trend- Criteria continue to be established and continue to drop at State and global levels

- ✓ Criteria established across all media
- ✓ Trend continues to establish criteria for more than PFOS and PFOA

LIKELIHOOD

- ✓ Approvals and timelines vary by State
- ✓ Several States expected to continue to default to EPA advisories

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IMPACT

- ✓ Impact driven largely by media and how low criteria are
- ✓ Values dropping to ppt detection levels in some cases

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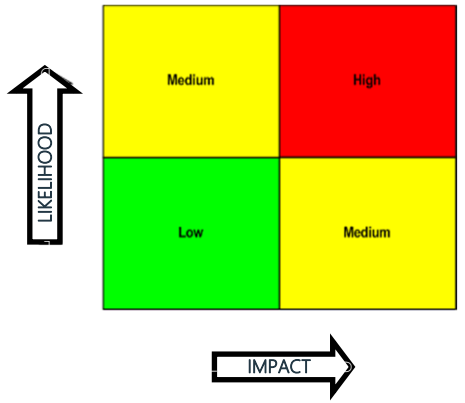

Legislative Activity and Model Bills

Trend- Several model bills being shopped at State level

- ✓ AFFF Model Bill (first proposed in WA, then AZ, CO, GA, KY, NH, MN, NY, VA), 2020 proposals in IN, VT, WI)
- ✓ MCL Model Bills and proposals (AZ- 2020 for MCLs for PFOA and PFOS, others to follow)

LIKELIHOOD

- ✓ Activity and approval expected to continue
- ✓ Several passed in 2018, 2019 and pending 2020

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- ✓ Established promulgated rule into law
- ✓ Criteria become requirement vs guidance

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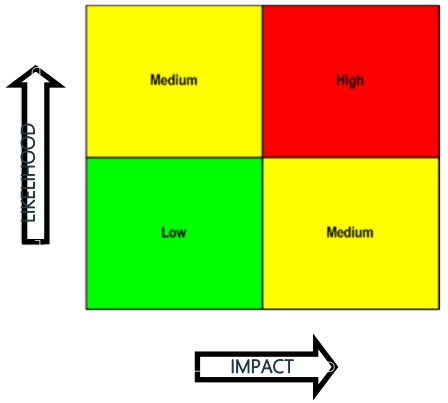

Product Stewardship and Supply Chain

Trend- Concern across industries –replacement chemistries and regrettable substitution

- ✓ In the US, watch CA, NY, VT, WA as product regulation drivers
- ✓ Outside of AFFF, focus on paper/packaging mostly, however some variability- from flooring to lubricants

LIKELIHOOD

- ✓ Momentum across US states not seen
- ✓ Trajectory of activity is on lower priority schedule than other activity

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- ✓ Impact will be driven by what products are deemed critical to operations and if alternatives are available

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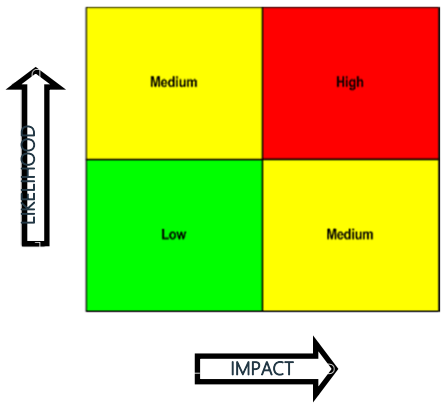

https://pfas-1.itrcweb.org/fact-sheets/

Potential Compliance Shifts

Trend –Hazardous substance designation and EPCRA TRI requirements being evaluated

- ✓ Hazardous substance designation for some States, eg, NY, VT, etc.
- ✓ TRI reporting- 170+ PFAS proposed- reporting in July 2021

LIKELIHOOD

- ✓ Anticipate additional State activity in absence of EPA hazardous designations

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IMPACT

- ✓ Impact may be dependent on geography for hazardous substance regulations
- ✓ TRI impact TBD

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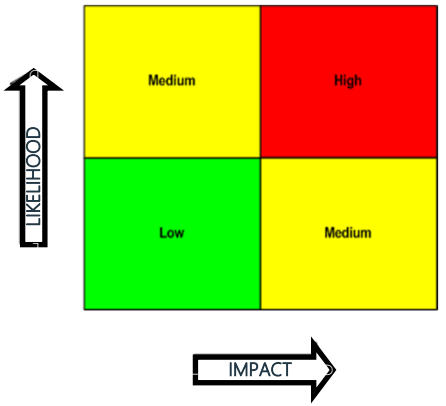

Surface Water/Foam

- New ITRC PFAS Sub-team established to evaluate surface water- several States considering criteria
- Surface water foam----MI, WI, MN sampling foam on surface water 100-10,000x greater concentration---manage perceived risk

LIKELIHOOD

✓ Regulatory discussions but little on criteria now- timeline not well understood yet

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✓ Impact expected to be substantial – challenge with gw-to-surface water interface and treatment/mgt options

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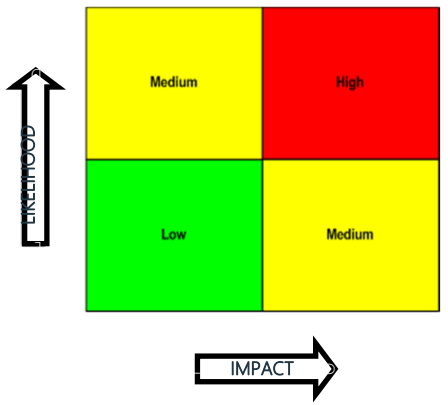

AFFF

Trend- General acceptance across industries to move from AFFF to fluorine-free alternatives

- ✓ FAA, NDAA, PERF, LASTFIRE establishing path forward to transition
- ✓ GreenScreen for Foam, Foam Analytical method available

LIKELIHOOD

- ✓ Reg and leg transition reqts range from 3 to 10 yrs
- ✓ High probability action required- from training to total transition

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- ✓ Impact expected from building fire suppression systems to storage and mobile fire systems

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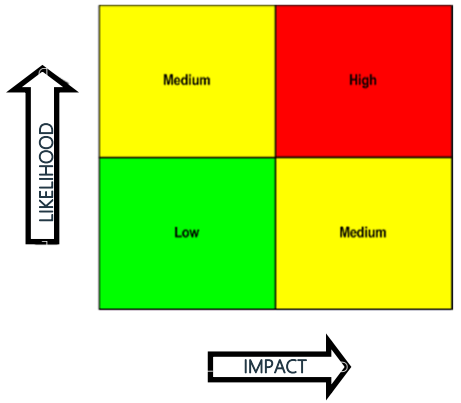

Other Efforts Worth Tracking

Other notable PFAS actions

- States PFAS programs
  - PFAS Task Forces, multi-agency efforts
  - Action Plans translating into legislation
  - Emergency Rules and Hazardous Substance Designations
- First NRDA claim; 3M pays Minnesota $850M
  - NJ, VT, NH have filed claims against major manufacturers
- UCMR5 – 29 additional PFAS proposed
  - All large PWS, some small PWS
  - Monitoring to occur 2023-2025
  - Frequency of detect determines need for MCL

Maine PFAS Task Force

European Commission – December 26, 2019

"Elements for an EU Strategy on PFAS"

- Phase out most PFAS by 2030
- Regulate PFAS as a class, rather than individual (to save time)
  - Establishes 100 ppt Drinking Water limit for 20 PFAS
  - Requires lab methods and TBD (suggested 500 ppt) DW limit for total of 4700 PFAS in 3 years

EU study on PFAS in fire-fighting foams (commenced February 2019)

- Contracted by the European Commission, DG Environment ('DG ENV') and by the European Chemicals Agency ('ECHA')

#1. Assessment of alternatives to PFAS-containing fire-fighting foams and the socio-economic impacts of substitution (the 'ECHA study')

#2. The use of PFAS and fluorine-free alternatives in fire-fighting foams (the 'DG ENV study')

RAMBOLL

COWI

wood.

OUTCOME = basis for a potential decision on the appropriate regulatory measures to control the risks associated with PFAS

Litigation Activity

- Thousands of litigation cases
- Litigation to date primarily against primary PFAS and foam manufacturers
  - So far many plaintiffs and only a few defendants
  - Expect a shift to litigation against users
- Case to watch for AFFF User community
  - Aqueous Film-Forming Foams Product Liability Litigation, Multi-district Litigation No. 2873 (D.S.C.), approx. 200 cases
  - Concerns groundwater contaminated with PFAS near military bases, airports and industries that used AFFF to extinguish fuel fires
  - Plaintiffs claim personal injury, need for medical monitoring, property damage, economic losses
  - Defendants include 3M, Tyco, National Foam, UTC, FEDEX, Federal, State, Local

ITRC PFAS Team

- Team of over 500 experts from all sectors: academics, stakeholders; state and local; federal; industry and consulting
- Producing technical resources for regulators, consultants, responsible parties, and stakeholders
- 2017-2018: PFAS Fact Sheets
- 2018-2019: Web-based Technical and Regulatory Guidance Document- Expected March 2020
- Ongoing:
  - Training Workshops;
  - Risk Communication Toolkit;
  - Internet-based Training
  - Explainer and Workshop videos

ITRC PFAS Team Leaders:

Bob Mueller, New Jersey Department of Environmental Protection

Virginia Yingling, Minnesota Department of Health

Questions?
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