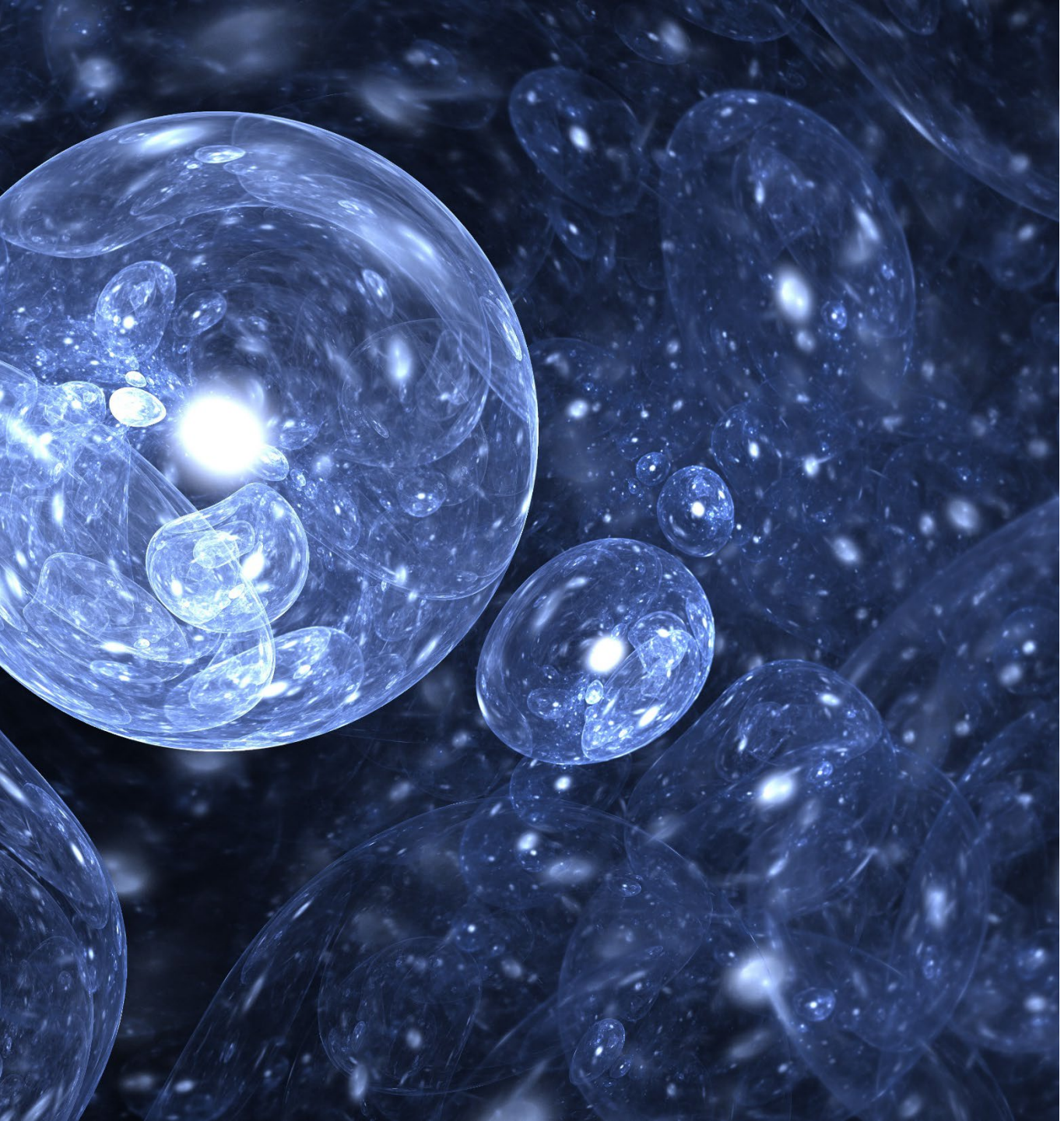
Welcome Participants

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



ERM Webinar Series: Fast Fluorinated Facts

PFAS in the News

18 May 2023

The business of sustainability

ERM

SAFETY MOMENT

Employee Injured by Vehicle Door in Windy Condition

WHAT HAPPENED?

- Employee reached into car to get supplies and kept one hand on door jam. A gust of wind closed the door on the employee's finger.

WHAT WAS LEARNED?

- In addition to temperature and precipitation, we also need to pay attention to wind.
- Make sure to secure all items including car doors in windy conditions.
- JHAs should include wind hazards and mitigation measures to secure items or equipment.
- Projects with vehicle-based tasks should include wind hazards and identify doors as pinch points.

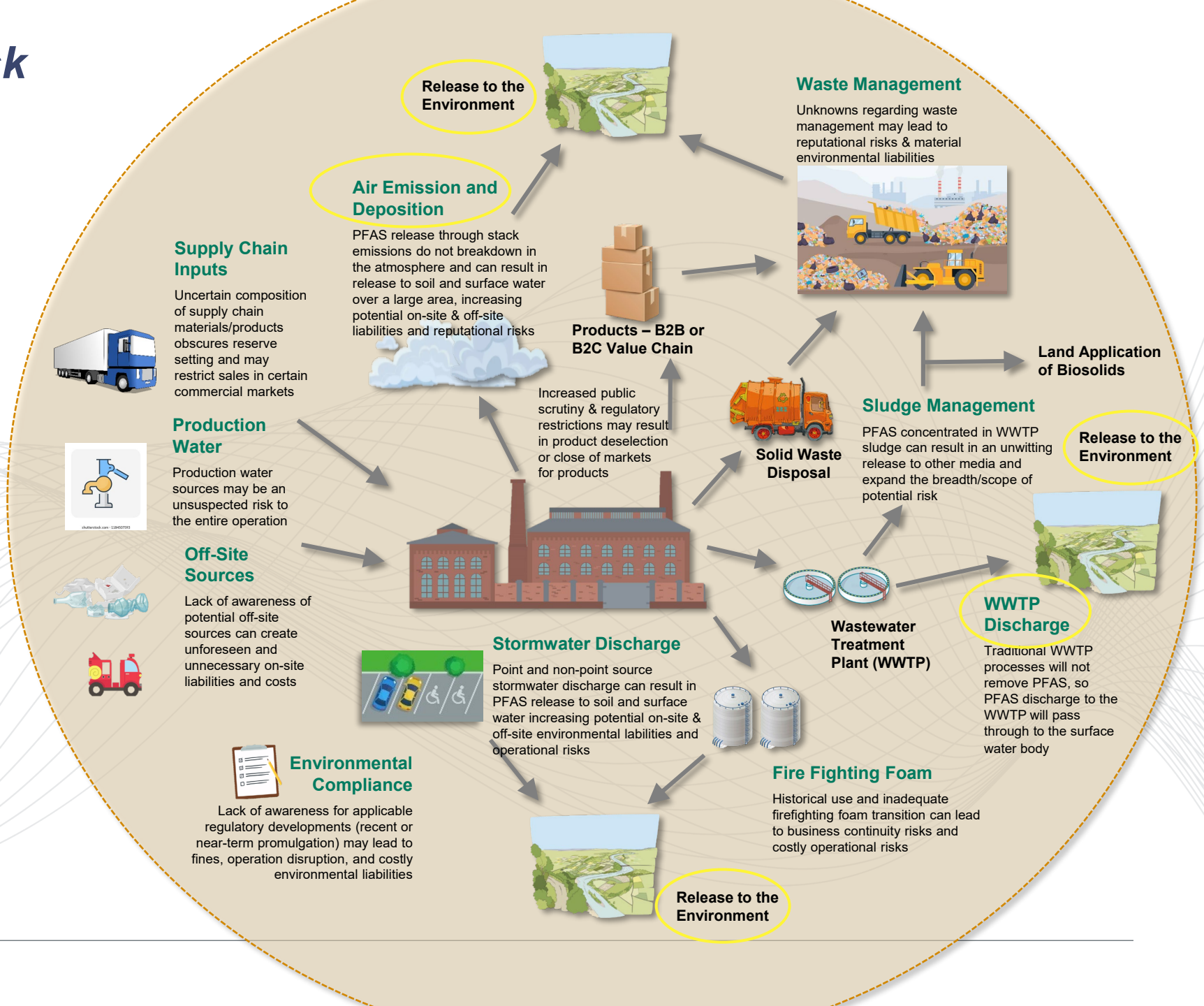
Identifying Business Risk Associated with PFAS

PFAS represents a complex and cross-functional risk across an entire operational footprint, driven by:

- Ubiquity in historical and current **supply chains**
- **Emerging** and **disparate regulations**
- **Public outcry and environmental justice concerns**

To ensure **business resiliency**, PFAS must be managed to avoid:

- **Damaged reputation** and eroding **shareholder value**
- **Product deselection** due to public & regulatory pressure
- **Disruptions in operations** due to supply chain, product & EHS regulations
- Increased environmental **liability & tort** claims



Speakers

Jennifer Byrd
Technical Director
Nashville, TN

Jeff McDonough
Technical Director
Denver, CO

Mark DiPrinzio
Technical Director
Philadelphia, PA

Jason Hnatko
Principal Consultant
Boston, MA

AGENDA

01 PFAS National primary drinking water regulation rulemaking

02 USEPA Proposed Rulemaking to regulate Additional PFAS under CERCLA

03 Air Emissions Testing Methods for PFAS

04 NJ Interim Residential and Non-Residential Soil Remediation Standards

PFAS NATIONAL PRIMARY DRINKING WATER REGULATION RULEMAKING

JEFF MCDONOUGH

PFAS National Primary Drinking Water Regulation (NPDWR) Rulemaking – March 29, 2023

Federal Register / Vol. 88, No. 60

What is EPA Proposing?

- MCLG for PFOA and PFOS: **zero**
- Enforceable MCL for PFOA and PFOS of **4 ng/L**
- Preliminary determination to regulate PFHxS, HFPO-DA[1], PFNA, and PFBS
- Proposing a hazard index[2] (HI) of 1 as the MCLG and MCL
- PQLs: PFOS/PFOA = 4 ng/L, HFPO-DA = 5 ng/L, PFNA = 4 ng/L, PFBS/PFHxS = 3 ng/L
- Results <PQL taken as zero to calculate running annual average

Preliminary Determination of HI

- Novel "General HI" approach; assumes dose additivity, occurrence, and likely co-occurrence as conservative measures
- $HI = \frac{[PFHxS]}{9} + \frac{[HFPO-DA^1]}{10} + \frac{[PFNA]}{10} + \frac{[PFBS]}{2{,}000}$
- Health Based Water Concentrations (HBWC): **9 ng/L** for PFHxS, **10 ng/L** for HFPO-DA[1], **10 ng/L** for PFNA, and **2,000 ng/L** for PFBS
- Proposed MCLG and MCL: HI < 1 (running annual average [quarterly]; MCL is enforceable)

[1]Includes the acid and ammonium salt forms of HFPO-DA

[2]Noncancer health effects, not specifically for mixtures

What Does this Mean?

GAC = Granular Activated Carbon
AIX = Anion Exchange Resins
RO = Reverse Osmosis
Nanofiltration = NF

Who's immediately affected?

- Public water systems (PWS; community & non-transient, non-community)
- State and tribal agencies

Who's eventually affected?

- Potential responsible parties discharging
- Agencies may choose to apply MCL broadly to "Waters of the State"
- Remediation sites

When would MCLGs/MCLs take effect?

- Target is promulgating the final rule in the Fall of 2023
- Compliance: 3 years after promulgation

Immediate actions after finalization

- Monitor (Rule Trigger Level[3]; no compositing)
- Notifications (as necessary)
- Treatment / Alternative Sourcing

How can we…

- Treat: GAC, AIX, RO/NF
- Comment[4]: Comment Link May 30, 2023
- Fund: Bipartisan Infrastructure Law

[3]1/3 of PFOA/PFOS MCL = 1.3 ng/L; 1/3 of HI for PFHxS/HFPO-DA/PFNA/PFBS = 0.33

[4]May 4 public hearing posted here)

USEPA Proposed Rulemaking to Regulated Seven Additional PFAS under CERCLA

JENNIFER BYRD

Advanced Notice of Proposed Rulemaking (ANPRM) – April 13, 2023

EPA is seeking **input** and **data** regarding potential future hazardous substance designation of

Seven PFAS besides PFOA and PFOS

PFBS, PFHxS, PFNA, GenX, PFBA, PFHxA, PFDA

- Additional relevant information in published scientific literature
- What other PFAS should EPA consider?
- Information relevant to preparing an economic analysis of the potential direct and indirect costs and benefits of the proposed rule (even though CERCLA precludes including cost as a consideration)

Precursors

- Literature on environmental degradation of substances to PFOA, PFOS and additional seven
- Factors regarding degradation time and environmental conditions that should be considered
- Data on environmental prevalence of the nine and precursors
- CAS numbers for precursors
- Ideas for how precursors could undergo laboratory analysis
- Economic analysis of impacts of precursors

Categories

Request for input on potential future designation of categories for PFAS that may have similar characteristics

- Chemical structure (carbon chain length, functional group)
- Physical and chemical properties
- Mode of toxicological action
- Precursors or degradants
- Co-occurrence

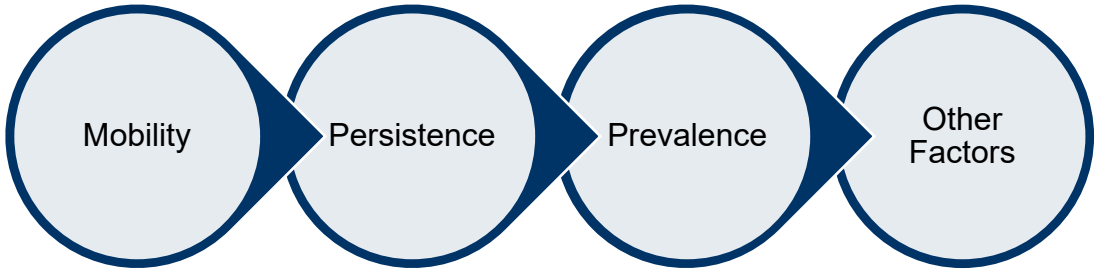
What does this mean?

Consequences of a CERCLA hazardous substance listing:

- CERCLA enables the federal government to order a PRP to remediate sites that have releases of hazardous substances
  - Cost recovery
  - Damages to natural resources
  - Costs of health assessments
  - Remediation
- Triggers notification for release
- DOT regulations for transport

What can we interpret from the ANPRM?

- EPA will be regulating more PFAS than just PFOA and PFOS
- EPA does not appear to be finished determining which PFAS require regulation
- Grouping strategies for PFAS regulation are still on the table
- Precursors are under consideration for regulation



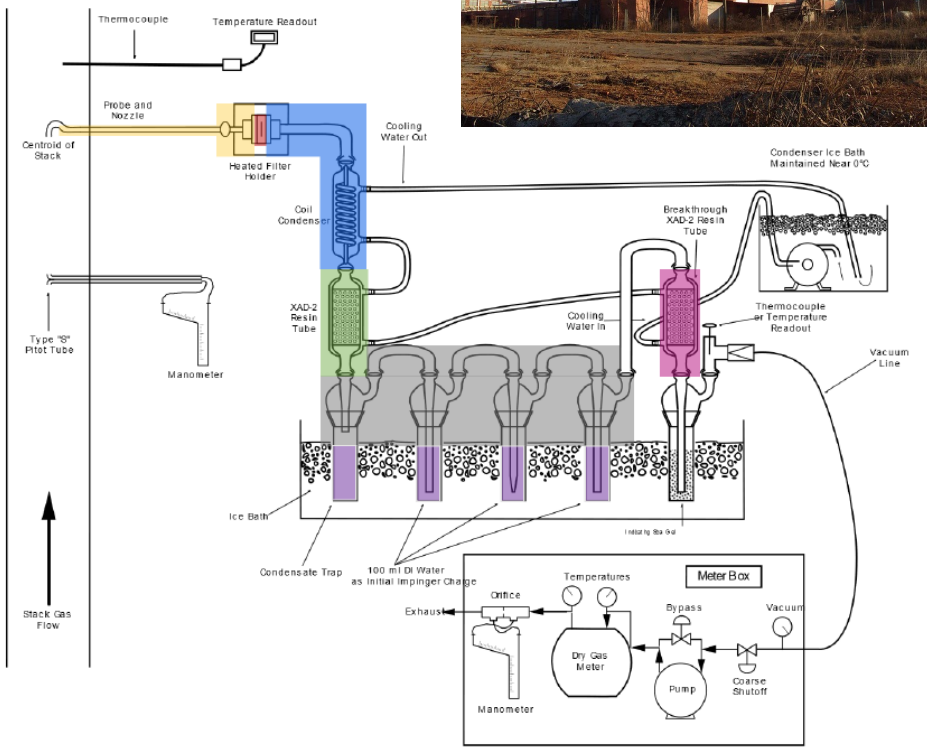
Not necessary to have information on all of these criteria for EPA to designate a PFAS compound as a hazardous substance

AIR EMISSIONS TESTING METHODS FOR PFAS

MARK DIPRINZIO, PE

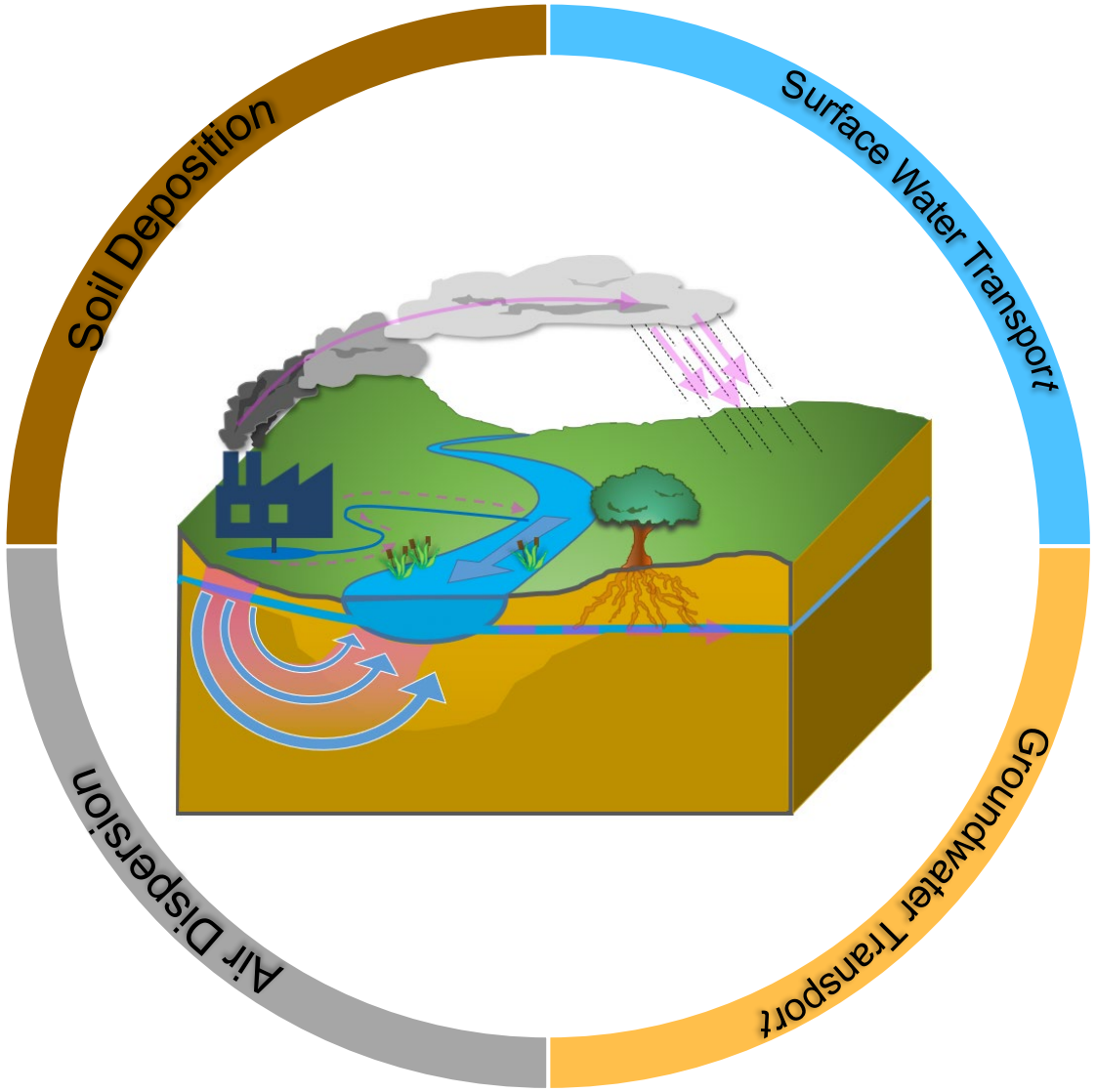
Testing for PFAS in Air – Stack Level Emissions

- EPA Emissions Measurement Center (EMC) posted an Other Test Method (OTM) for use as emission measurement method for PFAS from stationary sources.
- OTM-45 is a performance based test method that is capable of measuring upwards of 50 PFAS from stationary sources.
  - Draft method not approved by EPA; however, States may (and have) required OTM-45 for measuring stack-level PFAS.
  - Limitations exist with respect to compounds that can be measured and the level of detection limits in samples collected.
- Based on existing EPA Method 5 test train, with specific modifications, including coil condenser in line after heated filter, and XAD-2 adsorbent media tubes.
- OTM-45 provides for collection and analysis of semi-volatiles and particulate-bound PFAS compounds.
- Details the procedures for sample collection and the analytical methods, including reference standards to identify and quantify certain PFAS.



How it All Fits Together

- Prior to OTM-45, there was no uniform approach to measure PFAS air emissions.
- Define impacts of air emissions to soil, surface water, and groundwater.
- Air dispersion and fate and transport modeling simulate deposition and transport mechanisms to predict concentrations resulting from stack level emissions.
- Several state agencies require stack level PFAS emission limits. Limits based on modeling; thus the importance of a test method to measure PFAS emissions to demonstrate compliance.
- OTM-45 provides the framework to collect and measure PFAS emissions for any stationary source including industrial processes or treatment units, etc.



NJ INTERIM RESIDENTIAL AND NON-RESIDENTIAL SOIL REMEDIATION STANDARDS

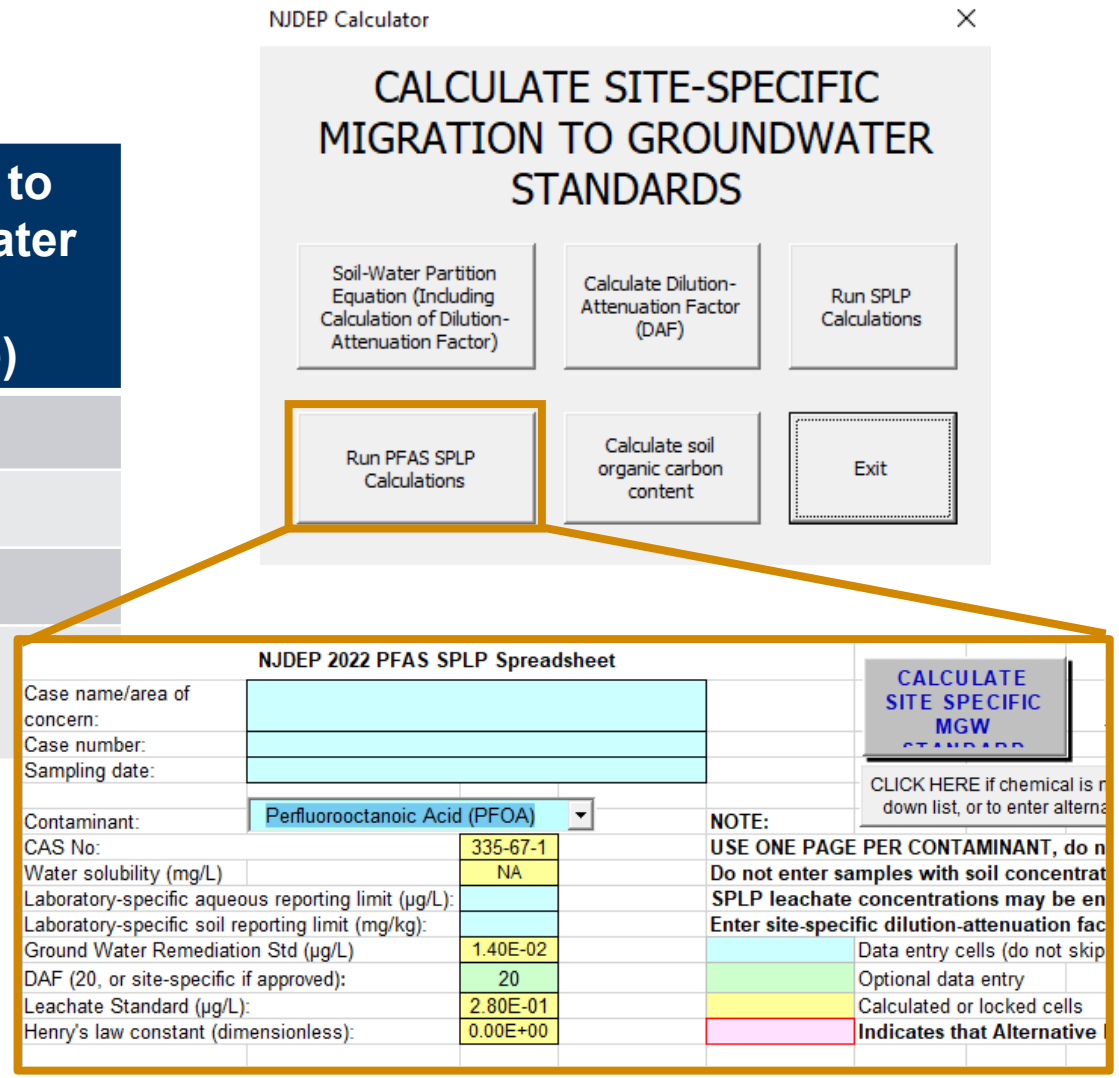
JASON HNATKO, PHD, PE
PRINCIPAL CONSULTANT, ERM

NJ Soil Remediation Standards

Published in NJ Register October 17, 2022

Compound	Ingestion-Dermal Exposure (Residential)	Ingestion-Dermal Exposure (Nonresidential)	Migration to Groundwater Exposure (Leachate)
PFNA	0.047 mg/kg	0.67 mg/kg	0.26 ug/L
PFOA	0.13 mg/kg	1.8 mg/kg	0.28 ug/L
PFOS	0.11 mg/kg	1.6 mg/kg	0.26 ug/L
“GenX” (HFPO-DA)	0.23 mg/kg	3.9 mg/kg	NA

NJDEP Site-specific Calculator



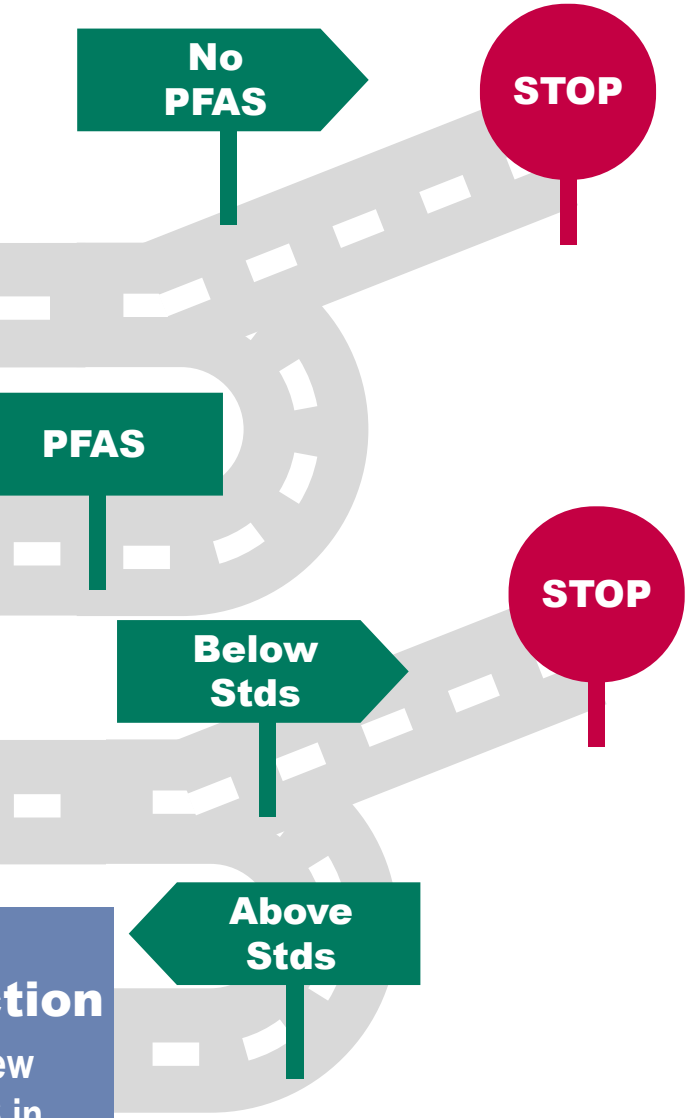
How will these standards affect my Site?

Current Site Status

1. **Active Site:** Address in next submittal
2. **Restricted Use RAO:** Address in biennial cert.
3. **Unrestricted Use RAO:** If site reenters CSRR program

Preliminary Assessment

PA/PA Addendum. Were PFAS used/released at the Site?

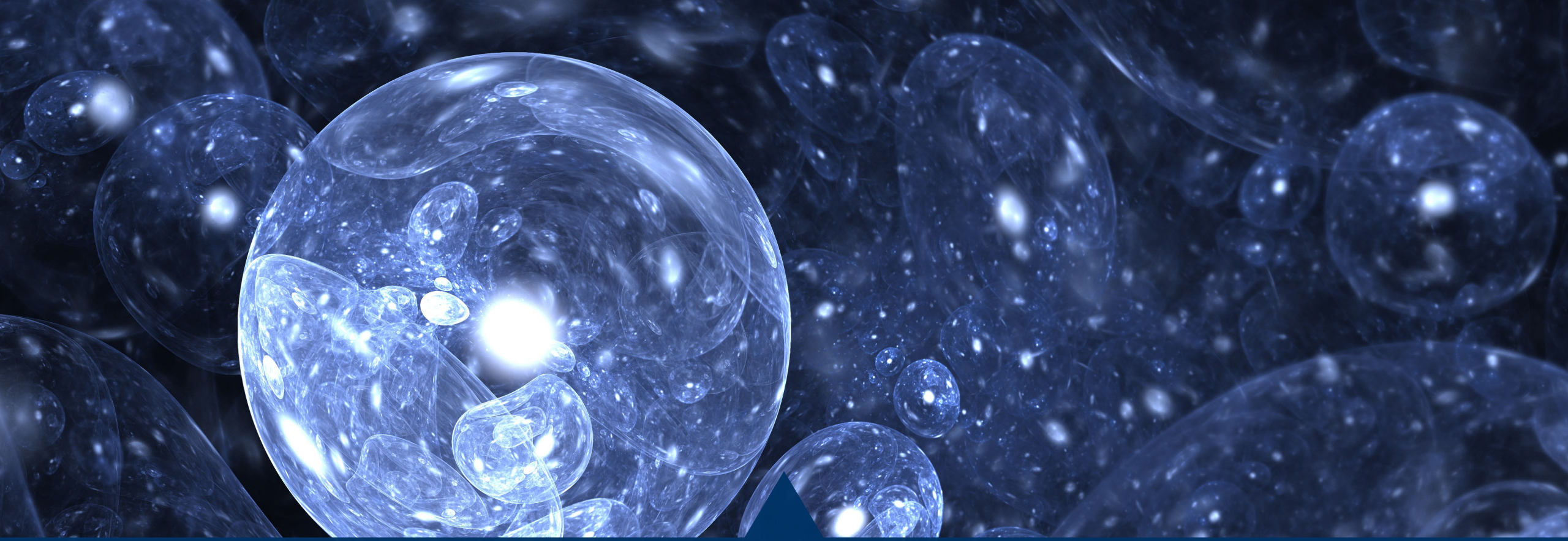


Soil/GW Sampling

Are PFAS present in soil or groundwater above standards?

Remedial Investigation/Action

RI/RA. Can create a new case/timeline for PFAS in soils.



Thank you.

Nadine Weinberg
Partner, ERM
nadine.weinberg@erm.com

Jennifer Byrd
Technical Director, ERM
jennifer.byrd@erm.com

Jeff McDonough
Technical Director, ERM
jeff.mcdonough@erm.com

Mark DiPrinzio
Technical Director, ERM
mark.diprinzio@erm.com

Jason Hnatko
Principal Consultant, ERM
jason.hnatko@erm.com

ERM