

Missouri Air Compliance Seminar



Air Toxics as a Key Enforcement and Compliance Issue

REGFORM Air Seminar – November 6, 2024

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KC 21361886v1

Air Toxics

- Reducing Air Toxics in Overburdened Communities
- Back to “Once In, Always In” for NESHAP Applicability?
- PFAS & the Air Pathway

NECI – Air Toxics

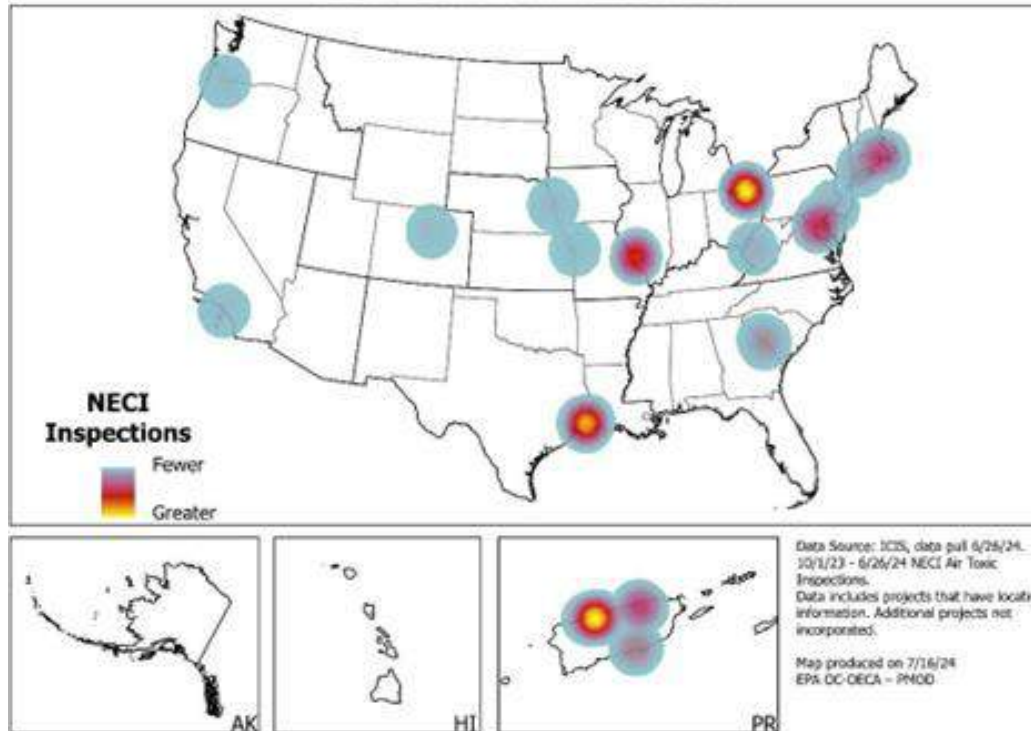


NECI – Reducing Air Toxics in Overburdened Communities

- Target, investigate, and address noncompliance with HAP regulations
- Focus on sources of HAPs in communities already highly burdened with pollution impacts
- Leaks, flares, and excess emissions

Air Toxics Inspections

Inspections Conducted Under the Reducing Air Toxics in Overburdened Communities NECI



Air Toxics Enforcement

- September 2024 – Lima Refining Company
 - \$150 million for emission reduction upgrades
 - 219 TPY VOCs
 - Over 16 TPY of HAPs and over 4 TPY benzene
 - \$19 million civil penalty

Air Toxics Enforcement

- July 2024 – Marathon Oil
 - \$64.5 million civil penalty
 - \$177 million in compliance upgrades
 - Mitigation projects will reduce VOC and hazardous air pollutants emissions by approximately 21,812 tons per year of VOCs

Air Toxics Enforcement

- June 2024 – EnerSys Energy (world’s largest industrial battery manufacturer)
- Lead-acid battery manufacturer EnerSys Energy Products Inc. to resolve alleged violations of the federal Clean Air Act at the company’s
- Warrensburg and two Springfield facilities.
- \$430,500 civil penalty

Air Toxics Enforcement

- March 2024 – East Side Plating (Portland, Oregon)
- April 2024 – PMI (Baltimore, MD)
 - 111 TPY of VOCs and 95 TPY of HAPs
- January 2024 – Best Petroleum (PR)

Air Toxics Enforcement

- May 2023 - Refinery – Whiting, Indiana
- EPA and DOJ Complaint alleged violations
 - Benzene Waste Operations NESHAP (BWON), Part 61, Subpart FF
 - New Source Performance Standards (NSPS) for VOC emissions from Petroleum Refinery Wastewater Systems at 40 C.F.R. Part 60, Subpart QQQ (QQQ)

Air Toxics Enforcement

- Refinery – Whiting, Indiana
 - \$40 million penalty, comprised of a civil penalty and stipulated penalties for violations of an earlier settlement.
 - \$5 million SEP
 - Capital investments with an estimated value of \$197 million

Air Toxics Enforcement

- EPA Press Release
 - “This settlement advances my office’s environmental justice initiative by providing cleaner air and reducing the negative health impacts on the low income and minority residents who live near BPP’s refinery,”
 - “The Whiting Refinery is surrounded by communities with environmental justice concerns. This settlement is part of EPA’s and the Justice Department’s ongoing focus on assisting communities that have been historically marginalized and disproportionately exposed to pollution.”

Air Toxics Enforcement

- Natural Gas Processors
 - April 2023 - EPA and DOJ announced three separate settlements
 - \$9.25 million in civil penalties
 - \$16 million combined on injunctive relief requirements at 26 gas processing plants and 91 compressor stations:



NESHAP Applicability – Once In, Always In?



EPA Proposed Rule - Once In, Always In for Reclassified Sources from Major Source to Area Source

- EPA Proposed Rule – 88 Fed. Reg. 66336 (Sept. 27, 2023)
- Comments Due – November 13, 2023

NESHAP PTE Definition 1994

- In 1994, the EPA promulgated the definition of PTE in the General Provisions of the NESHAP at 40 CFR 63.2, which defined PTE in terms based on the major source definition in section 112(a)(1) of the CAA.
- Synthetic Minor
 - Sources that would otherwise qualify as major sources are able to obtain enforceable permit limitations from the EPA or delegated authority containing physical limits or operational limits to bring their emission below the major source threshold.

1995 Seitz Memorandum

- Shortly after the EPA began promulgating individual NESHAP standards following the 1990 CAA Amendments, the Agency received multiple requests to clarify when a major source of HAP could avoid CAA section 112 requirements applicable to major sources by taking enforceable limits on its PTE below the major source thresholds.
- In response, the EPA issued a 1995 a memorandum that provided guidance on three timing issues related to avoidance of CAA section 112 requirements for major sources

1995 Seitz Memorandum – Once In, Always In

- Once In, Always in for NESHAP Applicability
- Under this interpretation, facilities that are major sources on the first substantive compliance date of an applicable major source NESHAP were required to comply permanently with that major source standard even if the source was subsequently to become an area source by limiting its PTE.

2007 Proposal to Replace Once In, Always In

- In that proposal, the EPA proposed that a major source that is subject to a major source MACT standard would no longer be subject to that standard if the source were to become an area source through an enforceable limitation on its PTE for HAP.
- Under the 2007 proposal, major sources could take such limits on their PTE and obtain “area source” status at any time and would not be required to have done so before the first compliance date

2018 Wehrum Memo Withdraws Once In, Always In

- On January 25, 2018, the EPA issued a memorandum from William L. Wehrum, Assistant Administrator of the Office of Air and Radiation, to the EPA Regional Air Division Directors titled “Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act” (MM2A Memorandum) withdrawing the OIAI policy.
- OIAI policy articulated in the 1995 Seitz Memorandum was contrary to the plain language of the CAA and, therefore, must be withdrawn.

2020 Final Rule Withdraws Once In, Always In

- The EPA published the 2020 MM2A final rule (85 FR 73854) on November 19, 2020, which formalized the withdraw of the OIAI policy first introduced in the 2018 MM2A Memorandum.

New Administration – E.O. 13990

- On January 20, 2021, President Biden issued Executive Order 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.

Controls required, EPA calls “Safeguards”

Controls required to maintain historical emission reductions:

- Facility seeking to reclassify from Major source to Area source must include controls
 - (1) Continue to employ the emission control methods (e.g., control device and/or emission reduction practices) required under the major source NESHAP,
 - (2) Control methods prescribed for reclassification under a specific NESHAP; or
 - (3) Emission controls that the permitting authority has reviewed and approved

Federally Enforceable

- Sources that reclassify from major to area source status, would need to take federally enforceable limitations on PTE as a condition of reclassification.
- All other NESHAP sources would continue to be governed by the general PTE definition under 40 CFR 63.2, which does not require federal enforceability.

Effective Date???

- Sources that have reclassified since January 25, 2018, Wehrum Memo
 - Before Final Rule – effective date within three years of publication of Final Rule to include safeguards and federally enforceable permit conditions
 - After Final Rule – effective upon reclassification

What the Proposal Does Not Address

- PTE limits taken by synthetic minor sources that are not reclassified
- PTE limits for NSR/PSD applicability
- PTE limits for Title V applicability
- EPA plans to address definition of PTE in NESHAP, NSR, and Title V programs in separate rulemaking or guidance

Final Rule – Major Source Reclassification

- September 10, 2024, 89 Fed. Reg. 73293
- EPA finalized requirements for sources that reclassify from major source status to area source status
- Applies to all sources that choose to reclassify after September 10, 2024.

Cannot Reclassify to Major Source

- Subparts F through I (the Hazardous Organic NESHAP)
- Subpart L (Coke Oven Batteries)
- Subpart R (Gasoline Distribution Facilities)
- Subpart X (Secondary Lead Smelting)
- Subpart CC (Refinery MACT)
- Subpart GG (Aerospace Manufacturing and Rework)
- Subpart II (Shipbuilding and Ship Repair)
- Subpart JJ (Wood Furniture Manufacturing)
- Subpart KK (Printing and Publishing)
- Subpart LL (NESHAP for Primary Aluminum)
- Subpart MM (Chemical Recovery Combustion Sources at Pulp Mills)
- Subpart EEE (Haz. Waste Combustors)
- Subpart HHH (Natural Gas Transmission and Storage)
- Subpart JJJ (Group IV Polymers and Resins)
- Subpart LLL (Portland Cement Manufacturing)
- Subpart RRR (Secondary Aluminum)
- Subpart UUU (Petroleum Refineries)

Cannot Reclassify to Area Source

- Subpart FFFF (Miscellaneous Organic NESHAP)
- Subpart JJJJ (Paper and Other Web Coating)
- Subpart MMMM (Surface Coating of Miscellaneous Metal Parts and Products)
- Subpart PPPP (Surface Coating of Plastic Parts and Products)
- Subpart ZZZZ (Stationary Engines)
- Subpart CCCCC (Coke Ovens: Pushing, Quenching, and Battery Stacks)
- Subpart DDDDD (Boiler MACT)
- Subpart FFFFF (Iron and Steel Manufacturing)
- Subpart IIIII (Mercury Cell Chlor-Alkali Plants)
- Subpart LLLLL (Asphalt Processing and Roofing)
- Subpart YYYYY (NESHAP for area source Electric Arc Steelmaking Facilities)
- Subpart JJJJJJ (NESHAP for area source Boilers)
- Subpart EEEEEEE (NESHAP for area source Gold Mines)

Example: Chemical Company (not in MO)

- Currently operates under a Title V permit and manufactures phenol-formaldehyde resins (used primarily in wood products industry) and Wet Strength Resins
- The facility was previously co-located with a wood products facility and was therefore a major source of HAP
- The wood products facility is no longer under common control with the resin plant. Potential controlled emissions from the resin facility are below Title V/NESHAP major source thresholds; however, because of state policy, the facility has been required to remain Title V and major for NESHAP
- The facility is currently subject to the following major source MACTs:
 - 40 CFR Part 63 Subpart OOO (Resin MACT)
 - 40 CFR Part 63 Subpart W (Wet Strength Resin MACT)
 - 40 CFR Part 63 Subpart DDDDD (Boiler MACT)
- In March 2024, submitted a permit application to reclassify to an area source
- The agency did not move on the application; now that the September 2024 rule updates have come out:
 - Facility can reclassify for Resin MACT and WSR MACT, but must remain major for Boiler MACT
 - Since they remain subject to a major source NESHAP, they must remain Title V
 - As part of “safeguards”, the facility will continue to operate RTO and LDAR program
- State agency asked facility to resubmit the application as a significant modification to the Title V to reclassify as area source for Resin MACT and WSR MACT

PFAS & the Air Pathway

overview

01

Brief Overview on PFAS and AQ Pathway

02

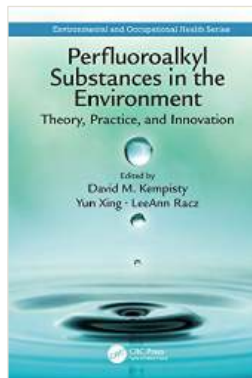
Evolving Regulatory Landscape

03

PFAS Fate and Transport Case Study: Surface Coating Operation

PFAS are among the most significant environmental regulatory developments in the last 40+ years

PFAS are in books



PFAS are in the news

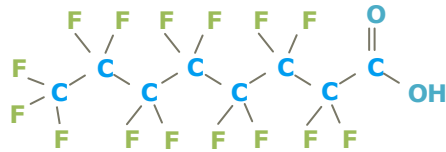
PFAS are in social media



PFAS are in the movies

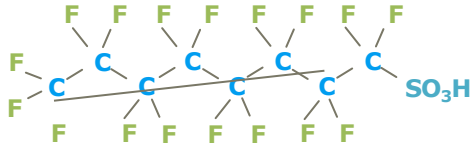
PFAS have numerous uses in industrial, commercial, and consumer applications

PFOA

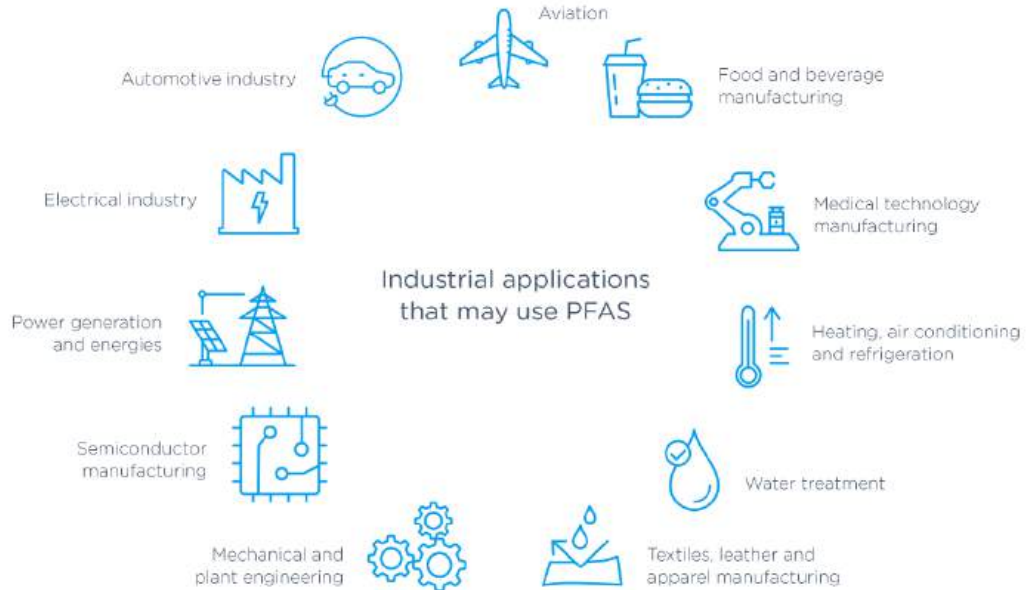


Perfluorooctanoic Acid

PFOS



Perfluorooctane Sulfonic Acid



What do we mean when we say “PFAS”?

“There is no precisely clear definition of what constitutes a PFAS substance given the inclusion of partially fluorinated substances, polymers, and ill-defined reaction products on these various lists.”

- U.S. EPA, Master List of PFAS Substances

PFOA and PFOS “The Original PFAS”

196 PFAS for TRI Reporting

~600 PFAS currently in commerce

~4,700 PFAS on OECD 2018 list

~10,000 PFAS based on USEPA working definition

~6,000,000 PFAS based on OECD 2021 definition

Six PFAS with Maximum Contaminant Levels (MCLs)

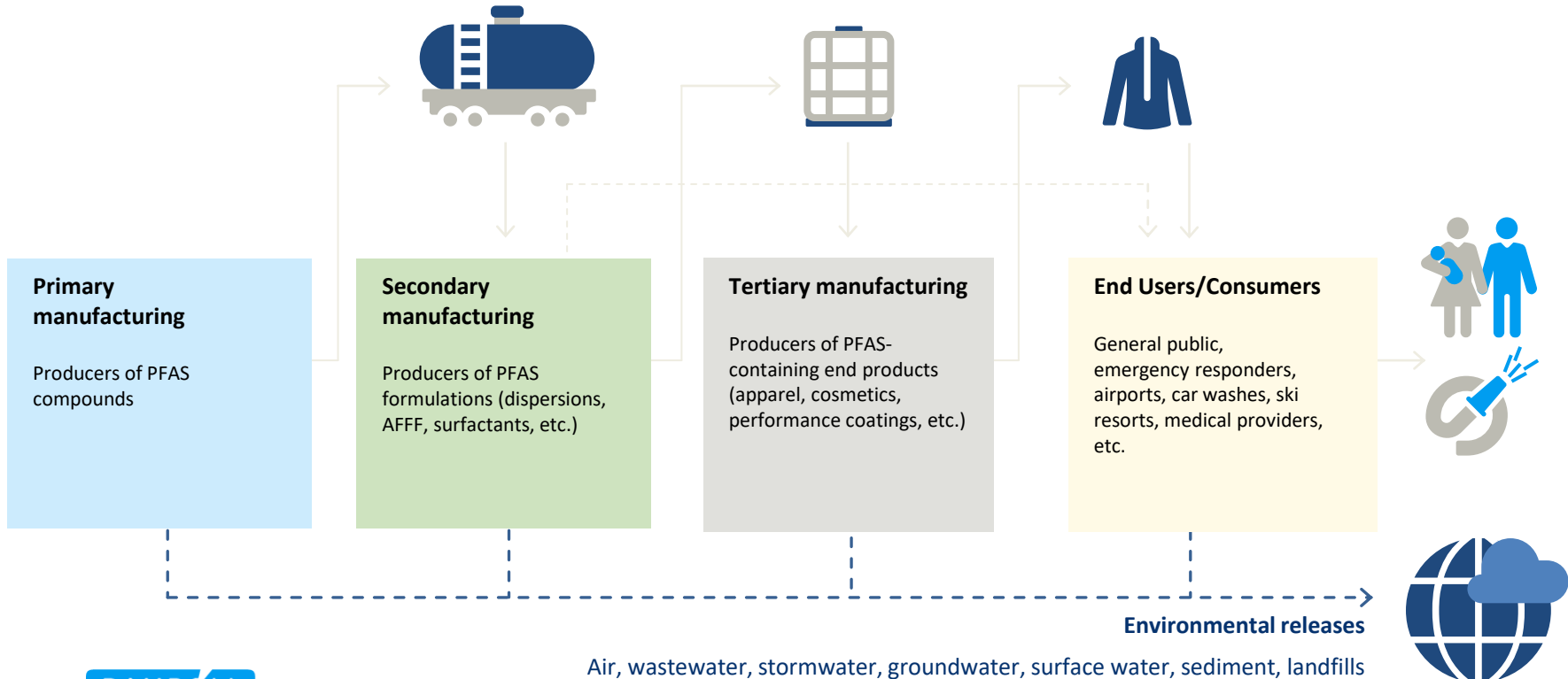
RAMBOLL

Bright ideas. Sustainable change.

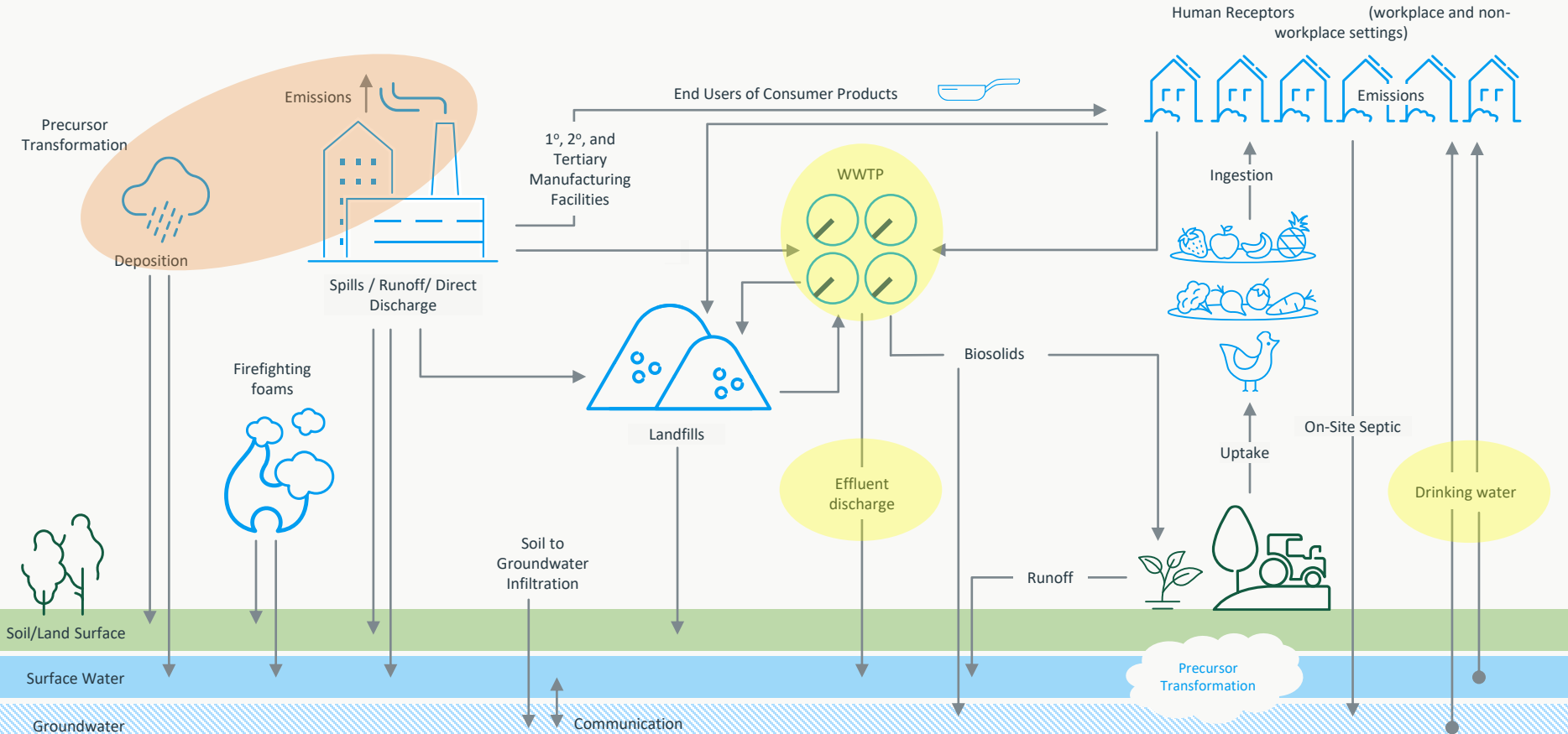


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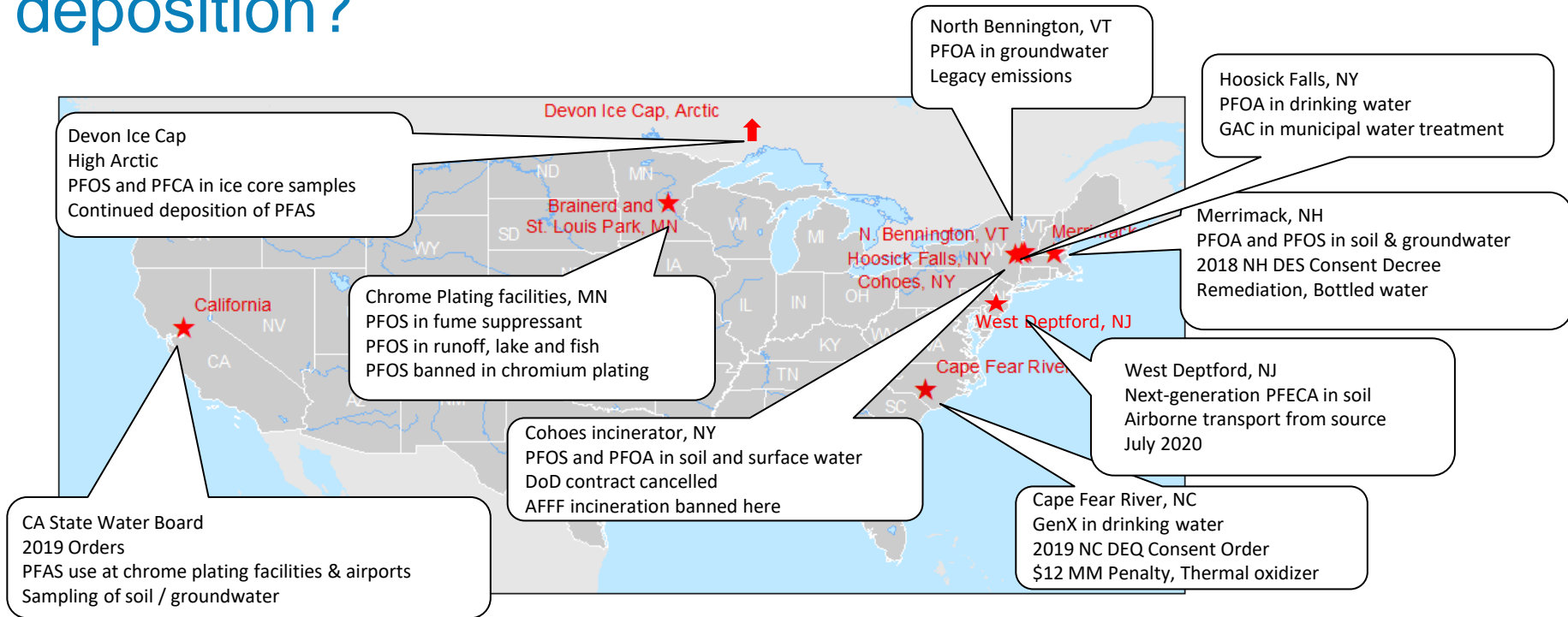
The life cycle of PFAS is complex



The life cycle of PFAS is complex



Why do we care about PFAS air dispersion AND deposition?



Air emissions and aerial deposition responsible, in part, for observed contamination

Recent Regulatory Updates

- State Efforts
- TSCA: PFAS Reporting Rule
- EPCRA: Removal of *De minimis* Exemption for PFAS
- Petition to EPA for HAP Listing
- Measurement/Modeling

State Efforts to Regulate PFAS in Air Quality

| State | PFOA Concentration ($\mu\text{g}/\text{m}^3$) | Averaging Period |
|----------------|-------------------------------------------------|-------------------|
| Michigan | 0.07 | 24-hour |
| Minnesota | 0.063 | 24-hour |
| New Hampshire* | 0.05 0.024 | 24-hour Annual |
| New York | 0.0053 | Annual |
| Texas | 0.005 | Annual |

* Denotes a value for ammonium perfluorooctanoate, a precursor to PFOA

Look for other states to begin regulating PFAS and for the list of regulated PFAS to increase.



TSCA PFAS reporting and recordkeeping rule

- EPA authority under TSCA Section 8(a)(7)
 - Mandated by Congress in 2020 National Defense Authorization Act (NDAA)
 - Codified at 15 U.S.C. 2607(a)(7)
- Final rule in 48 Federal Register pp. 70516-70559, Wednesday, October 11, 2023
 - Codified at 40 CFR Part 705

TSCA PFAS Reporting and Recordkeeping Rule

Rule Summary

- One-time reporting
- Applicable to companies who manufacture (including import) or have manufactured (including imported) PFAS for commercial purpose in any year between 2011 and 2022
- Importers of PFAS in articles are considered PFAS manufacturers under this rule
- No *de minimis* or product use (e.g., impurities, test marketing, R&D, etc.) exemptions
- EPA issued a structural definition for PFAS to avoid limiting the scope using a discrete list - any substance that meets the structural definition, including fluoropolymers, are subject to the rule
- Very complex rule with potential lengthy time needed to gather information (supply chain considerations)
- Reporting deadline for most facilities = January 11, 2026

Toxic Release Inventory Changes in 2024

- In November 2023, USEPA has removed the *de minimis* exemption, which is expected to significantly expand the number of facilities that must report releases of PFAS
 - Still only need to report individual PFAS chemicals that exceed the 100 lb/yr threshold
 - Applicable to chemicals that are *manufactured, processed* and *otherwise used*
 - No testing/sampling required, but facilities should document their analysis
- Expect that USEPA will closely review these submissions, along with TSCA reports
- Further expansion of TRI applicability could be a subsequent step, including removal of the 100 lb/yr reporting threshold



States Petition EPA to Designate as HAP

- In August 2024, three states (NJ, NC, NM) petitioned EPA to request 4 PFAS chemicals be regulated as hazardous air pollutants:
 - PFOA (perfluorooctanoic acid)
 - PFOS (perfluorooctane sulfonic acid)
 - PFNA (perfluorononanoic acid)
 - GenX (HFPO dimer acid)
- If deemed HAP, what happens?
 - Benchmarking to identify industries subject to MACT
 - Direct manufacturers most likely – everyone else probably area source
 - TRI results will help identify
 - Rule development



Can we measure and model PFAS in air?

Air Dispersion Modeling

- Air emissions and deposition often play an important role in PFAS contamination
- Considerable uncertainty in the atmospheric deposition properties of several PFAS
- Characterization of PFAS aerial deposition requires specialized expertise and careful application of data and methods
- Long-range transport of PFAS can introduce non-local (background) contributions to a site

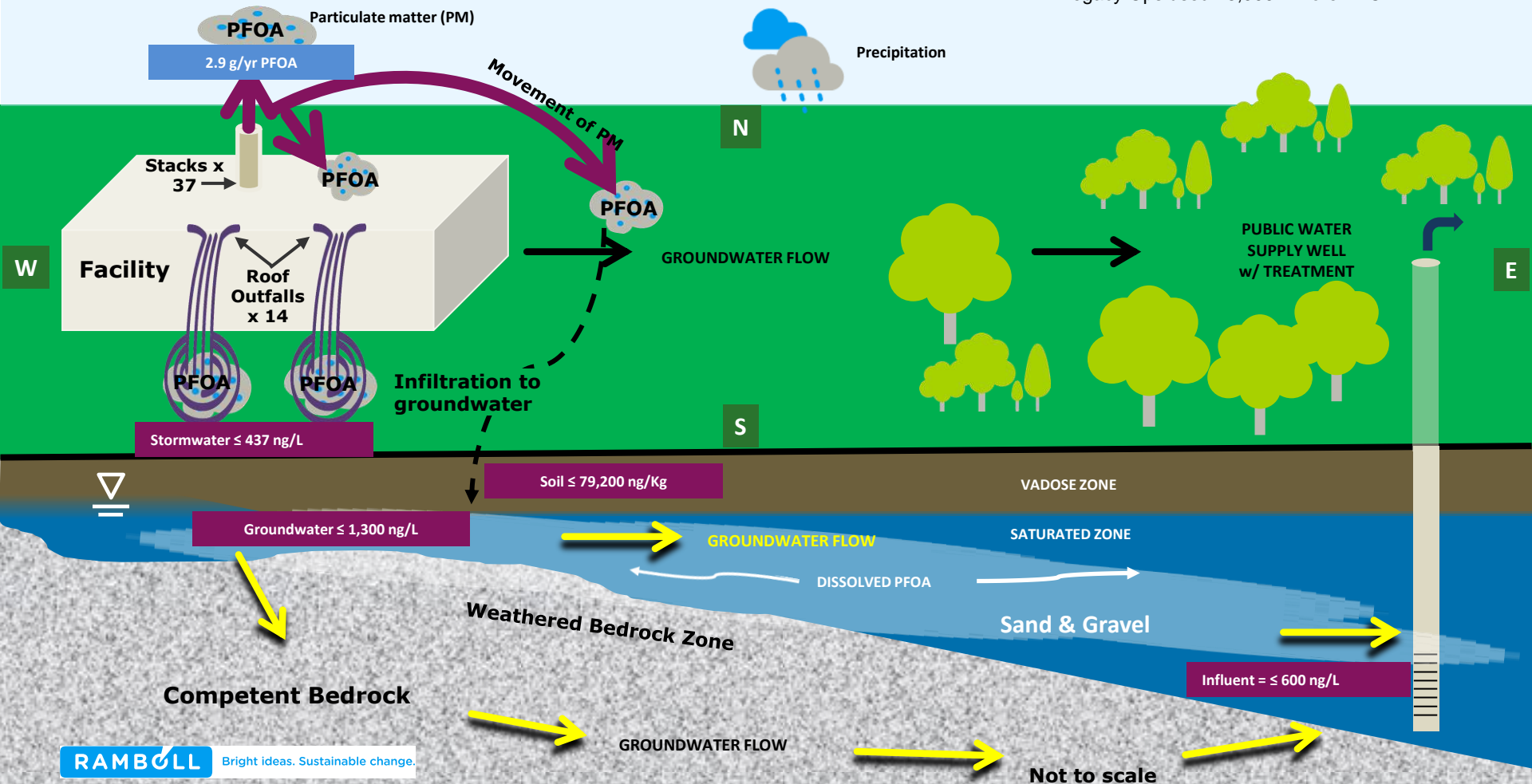
Measurement Methods

- Draft Methods OTM-45 (semi-volatile/condensable) & OTM-50 (volatile)
- OTM-55 in development (add'l semi-volatile)

The combination of measurements and modeling of deposition can be a powerful tool to understand the contribution, or lack thereof, of air emissions to observed contamination

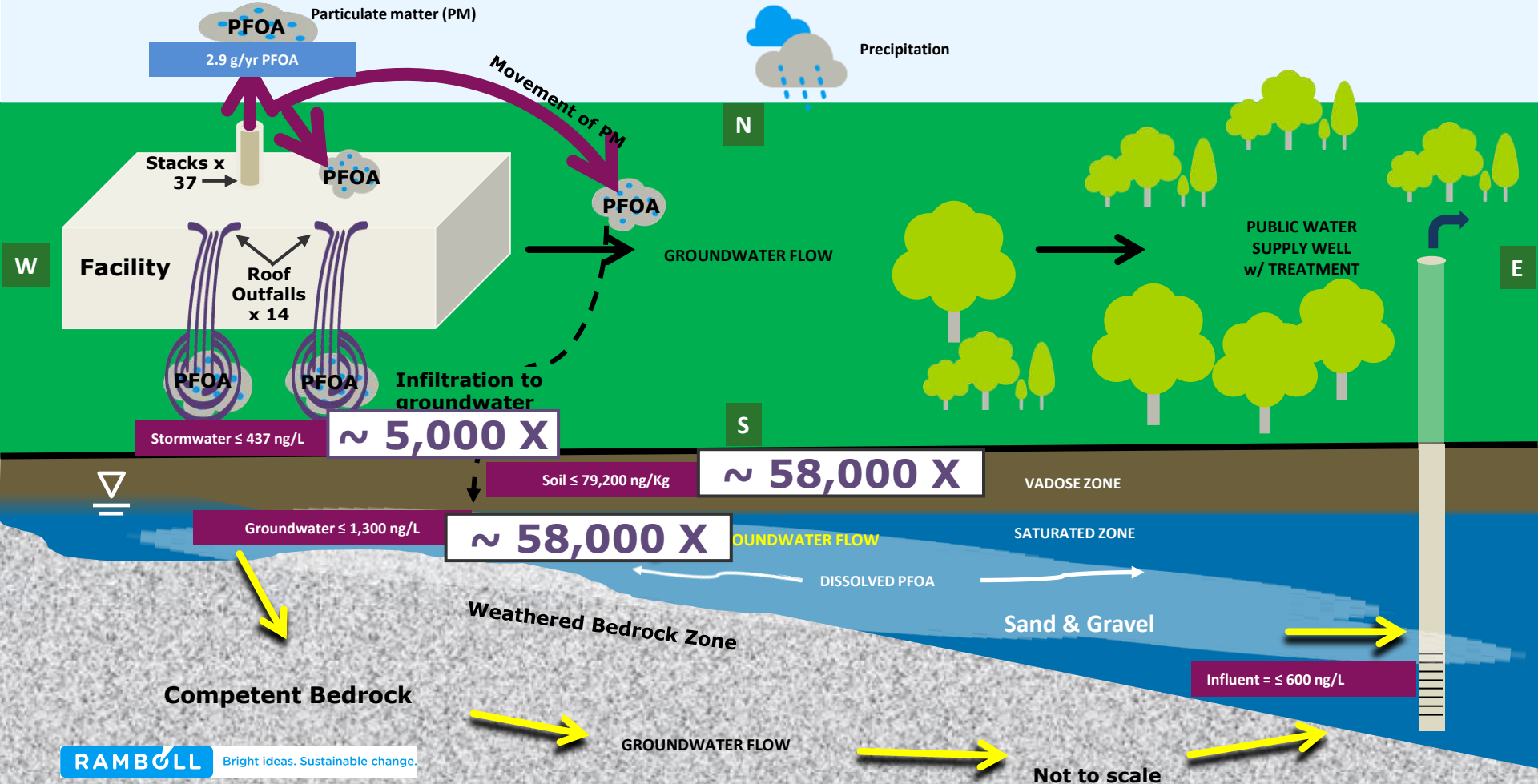
Environmental sampling results: CURRENT CONDITIONS

Legacy Ops: ~37 years; Then Current Ops: ~4 years
→ Legacy Ops used ~5,000 x more PFOA



Reconciliation of Environmental Sampling Results to Estimates

Legacy Ops: ~37 years; Then Current Ops: ~4 years
→ Legacy Ops used ~5,000 x more PFOA



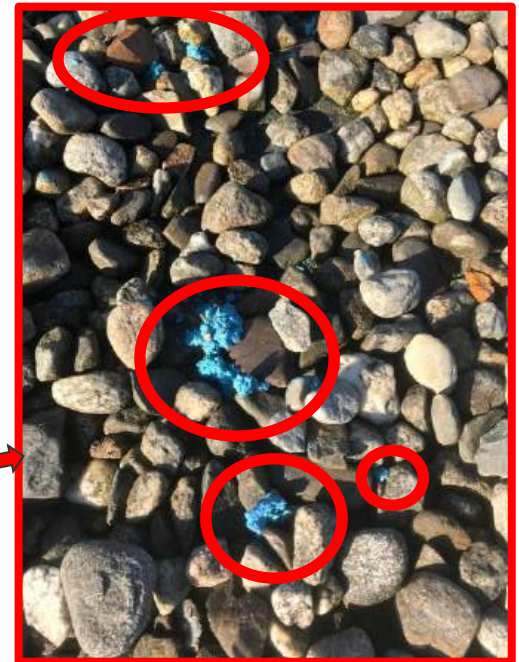
Examples of coating agglomeration and chunking



**Coating Agglomeration on
Inside of Stack Cap**
≤17,200,000 ng/Kg PFOA



**Roof Ballast and Roof Stack
Residue Under Roof Ballast**



**PFAS Residue in Roof Ballast from
Chunking of Coating Agglomeration
Occurring in Stacks**

≤13,000,000 ng/Kg PFOA

Findings and conclusions

01

Agglomeration of PFOA-containing coatings in stack components during **Legacy Ops** tenure have resulted in the release of significant PFOA mass in residual coatings to the roof, which have served as a major source of PFOA for decades until roof replacement.

02

Emissions and mass of PFOA released by **Legacy Ops** were exponentially greater than **Current Ops**, resulting in commensurate greater PFOA mass transport from **Legacy Ops** compared to **Current Ops** via the pathways shown.

03

The measured concentrations in the environment on site and at the Public Water Supply Well cannot be reconciled to **Current Ops**.

04

Multiple lines of evidence (at least 5) point to **Legacy Ops** as the source of the PFOA observed in media around the facility and at the Public Water Supply Well with the potential for de minimis contributions from **Current Ops**.

PFAS Air Emissions from Landfill Gas

- Sampling at three MSW landfills in FL for 27 neutral PFAS compounds
- Key findings:
 - 13 neutral PFAS observed, primarily fluorotelomer alcohols, acetates, olefins and acrylates
 - The mass of total fluorine leaving in landfill gas (32-76%) is comparable to that leaving in leachate (24-68%)
 - Landfill gas is a significant pathway for introducing PFAS into the environment



Landfill Gas: A Major Pathway for Neutral Per- and Polyfluoroalkyl Substance (PFAS) Release. Environ. Sci. Technol. Lett. Lin, A.M. et al. June 26, 2024.

Questions?



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