

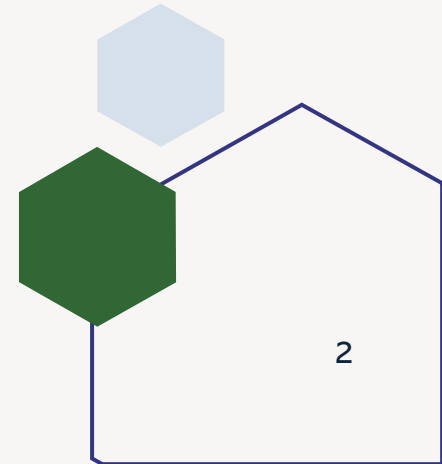
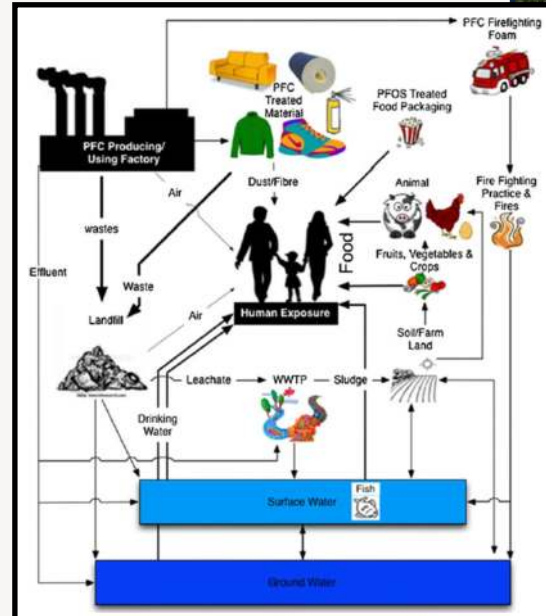
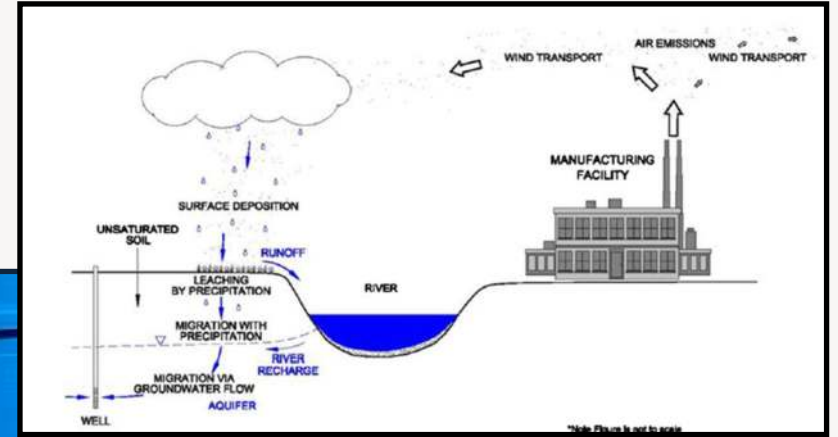
PFAS: Air Emissions Perspective

Cathy Beahm, Administrator
Air Resources Division



PFAS Topics from an Air Perspective

- ❖ Air Sources of Interest
- ❖ Case Study – Learning Opportunity
- ❖ NH Statutory and Rules Framework
- ❖ EPA PFAS Research and Development Work
- ❖ Takeaways for the Regulated Community



PFAS Air Emission Sources of Interest



PFAS Production Facilities

Raw material manufacturing



PFAS Use in Manufacturing

Production of products that contain PFAS



PFAS in Industrial Products

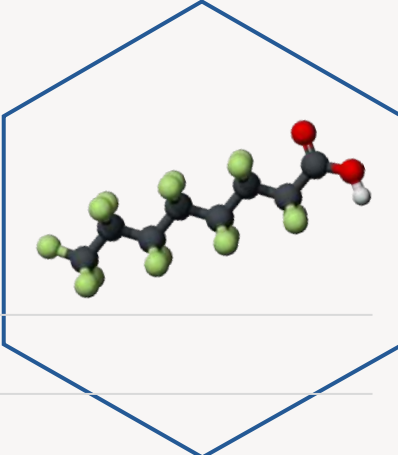
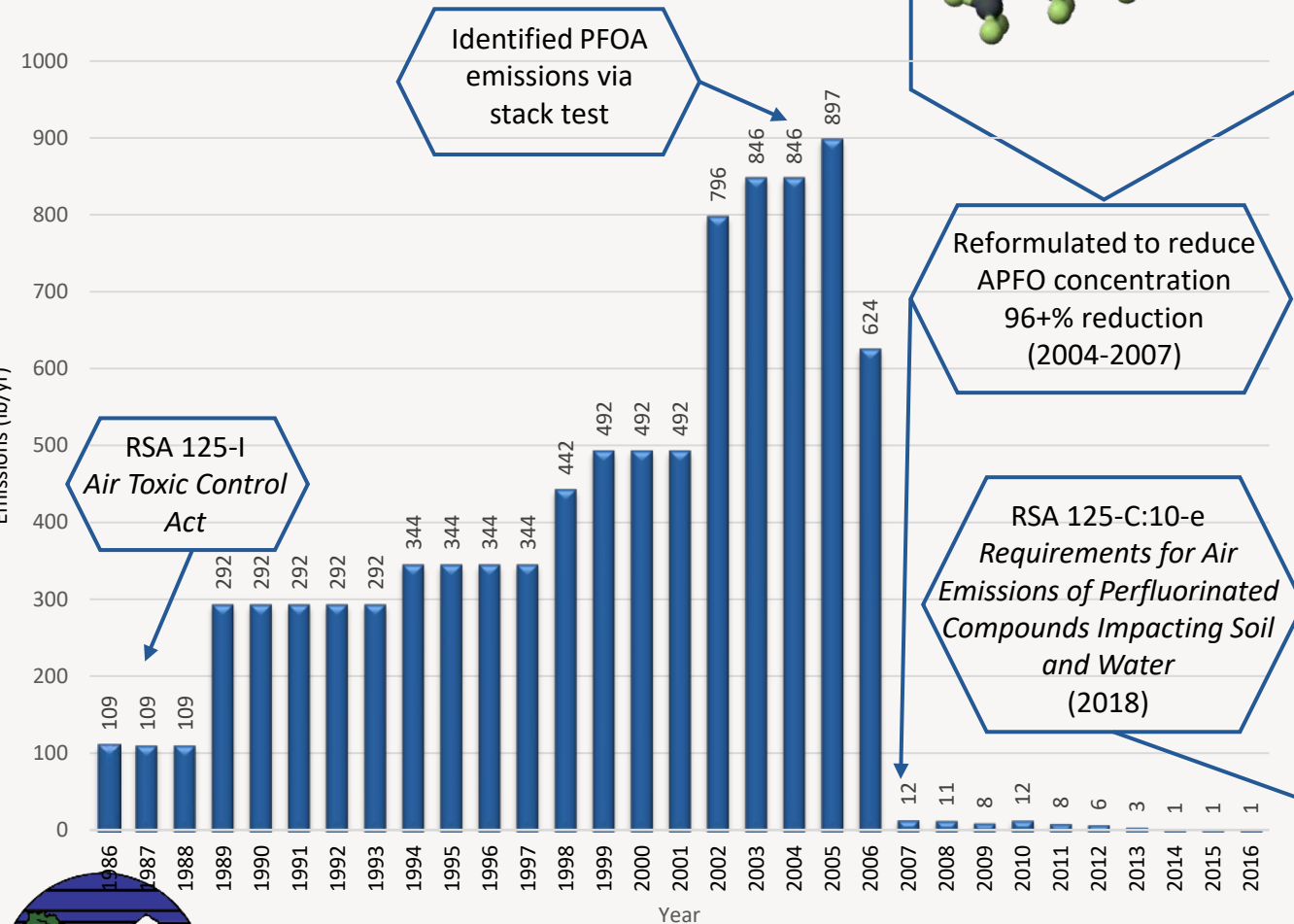
Use of chemical products that contain PFAS (e.g., AFFF or mist suppressants)



Environmental Occurrence

Fugitive emissions
WWTP sludge (SSI, dryers)
Landfill gas (LFGTE, dust)
Thermal Treatment (soil)

Case Study



* Estimated PFOA emissions only (no other PFAS, precursors or PICs) and based on 2004 stack test results and number of towers in operation in any given year.

PFAS in Rainwater



State	Entity Conducting Sampling & Analysis	Location(s)	Year	# samples	# PFAS analytes tested	PFAS results (ng/L)
NH	SGPP/Golder	Merrimack, Concord, Nashua	2021 – 2022	40	24	0.46 – 16
Great Lakes Region	IADN	5 sites	2020 – 2021	unknown	38	100 – 400*
OH/IN	College of Wooster	7 urban, suburban and rural sites	April, 2021	unknown	17 detected; unknown tested	50 – 850
WI	NADP	8 sites	2020	91	34	0.7 – 6.1
Nationwide	NADP	30 sites	2019	37	36	<5
NC	DEQ	7 sites	2018	unknown	28	Up to 630 (HPFO-DA)

“We showed that deposition from rainfall events integrated over a year could represent and supply a large fraction of PFAS loading to large lakes, and similarly, to terrestrial environments that are not receiving any other point-source loadings of PFAS.”

- Martin Shafer, Sr Scientist
University of Wisconsin-Madison

“It’s clearly reflective of the transition from long-chain to short-chain. Those are fairly abundant in these samples and those are also the ones that we see a lot in consumer products. The primary concern is still exposure through ingestion or contact with PFAS-coated products, but the contaminated precipitation does, nonetheless, spread the robust chemicals around the environment where they build-up in water bodies and wildlife. Spread through atmospheric deposition is also likely contributing to a manmade ‘background’ level of the contaminants within the environment.”

- Marta Venier, Environmental Chemist
Indiana University



*unpublished data undergoing quality review

NH PFAS Statutory and Rules Framework

RSA 125-I, *Air Toxic Control Act*

- ❖ Promotes public health by reducing human exposure to toxic chemicals by regulating releases into the ambient air.
- ❖ Env-A 1400, *Regulated Toxic Air Pollutants* sets ambient air limits for 100s of RTAPs including but not limited to APFO (ammonium salt of PFOA)

Ammonium perfluorooctanoate (APFO)		
	24-hr	Annual
Ambient Air Limit	0.050 $\mu\text{g}/\text{m}^3$	0.024 $\mu\text{g}/\text{m}^3$
De Minimis	0.00059 lbs/day	0.22 lbs/yr



RSA 125-C:10-e Requirements for Air Emissions of PFAS Impacting Soil and Water

BACT Requirement

- ❖ A device that emits to the air any PFAS or precursors that have caused or contributed to an exceedance of an AGQS or SWQS as a result of the deposition of any such PFAS or precursors from the air, shall be subject to the determination and application of BACT.
- ❖ The construction, installation, or modification of any device that has the potential, based on an applicability threshold adopted by the department, to cause or contribute to an exceedance of an AGQS or SWQS as a result of the deposition of any such PFAS or precursors from the air, shall be prohibited without first applying for and obtaining a permit from the department that establishes emission limitations for such device based on BACT.

Cause/Contribute Requirement

- ❖ The application of BACT cannot cause or contribute to or have the potential to cause or contribute to an exceedance of an AGQS or SWQS, as a result of the deposition from the air.

Additional Requirements

- ❖ The application of BACT cannot exceed emissions allowable under RSA 125-C or RSA 125-I.
 - ❖ Emissions cannot be in an amount disproportionate to the emissions of PFAS from similar APCE at other facilities.



NHDES is authorized to develop administrative rules pertaining to PFAS and RSA 125-C:10-e. NHDES plans to commence stakeholder discussions relative to potential rulemaking in 2023.

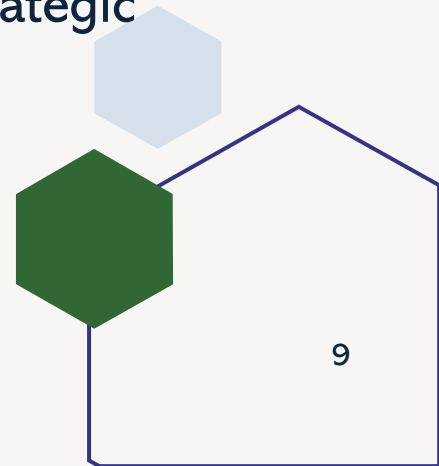
EPA Ongoing PFAS R&D

- ❖ Stack testing methods to detect and measure 50 PFAS (OTM-45 and Additional Source Emission Measurement Methods) 2021 – 2022
- ❖ Fate and Transport – Case Study in NC (2021)
- ❖ Thermal treatment of PFAS in soil – joint effort with DOD (draft report 2021)
- ❖ Disposal and Destruction Guidance Document released December 2020 (update due December 2023)
- ❖ Incineration studies (Technical Brief)
- ❖ Thermal treatment of PFAS in biosolids (expected 2022)
- ❖ Treatment approaches in landfill leachate liquids & gasses (expected 2022)
- ❖ Grants on PFAS research (granted 2019; results 2022 – 2023)
- ❖ PFAS vapor intrusion (expected 2022)
- ❖ Atmospheric deposition sampling methods (early stages)



Takeaways for the Regulated Community

- ❖ SDS – lack information (proprietary, low concentrations) ASK VENDORS
- ❖ Not a PFAS User? THINK AGAIN. Ask yourself: Do I use a material that imparts a PFAS-like characteristic? (mist suppressant, oil, water, stain, and soil repellency, chemical and thermal stability, and friction reduction)
- ❖ Take RSA 125-I, Air Toxics Control Act and Env-A 1400 RTAP regulation seriously. EVALUATE ALL RTAP EMISSIONS. Even non-PFAS ones. Who knows what the next emerging contaminant will be?
- ❖ Low AALs and compliance with them does not guarantee an exemption from the PFAS BACT law. Participate in stakeholder groups when NHDES starts rulemaking.
- ❖ Keep up with EPA work being conducted on PFAS with regards to their PFAS Strategic Roadmap. ([EPA R&D webpage](#))





Thank you

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