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*NC Department of Environmental Quality
PFAS Strategy*

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“PFAS” or Per- and Poly- fluoroalkyl Substances

All are fluorinated carbon-chain compounds

- C-F bonds

>7000 PFAS?

- Man-made
- Unknown health effects

Manufactured globally

- Oil and water repellent
- Temperature and friction resistant

Extremely thermally & chemically stable

- PFAS decompose at > 400C
- Resistant to oxidation/reduction reactions

Sources of Environmental PFAS

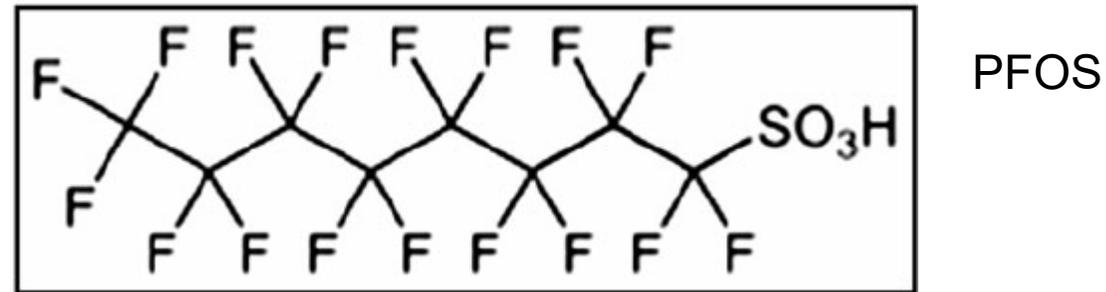
1. Fire training & response
 - AFFF
2. Industrial Sites
 - Emissions to air and water
 - Manufacturing, spills, disposal
3. Landfills
 - Leachate → WWTPs
 - Industrial & consumer waste
4. WWTPs & Biosolids
 - Lagoons → air, soil, water
 - Biosolids –
 - Land application → plant, animal uptake
 - Run-off, infiltration
5. In-home consumer products
 - Food packaging, stain-resistant products, etc.



How are “Per-” and “Poly-” PFAS different?

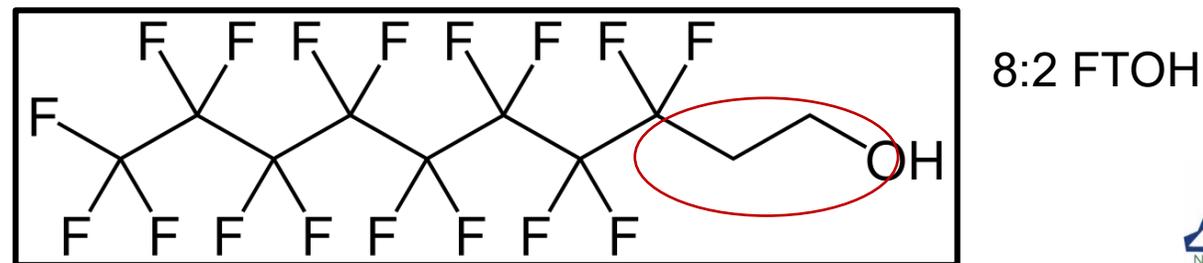
- **PER**-fluorinated PFAS

- Fully fluorinated carbon chain with charged functional group
- “Terminal” PFAS- don’t degrade further than this molecular state



- **POLY**-fluorinated PFAS

- Carbon chain is not fully fluorinated; Hydrogen replaces some Fluorine (weaker bond)
- “Precursor” PFAS that degrade into the “Terminal” PFAS



*Department of
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North Carolina DEQ Action Strategy for PFAS

June 7, 2022



DEQ prioritizes three key action areas:

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PROTECTING COMMUNITIES

We will continue to identify and notify those who may be at risk of exposure, investigate the human health risks and expand the base of scientific knowledge for North Carolina-specific PFAS compounds.



PROTECTING DRINKING WATER

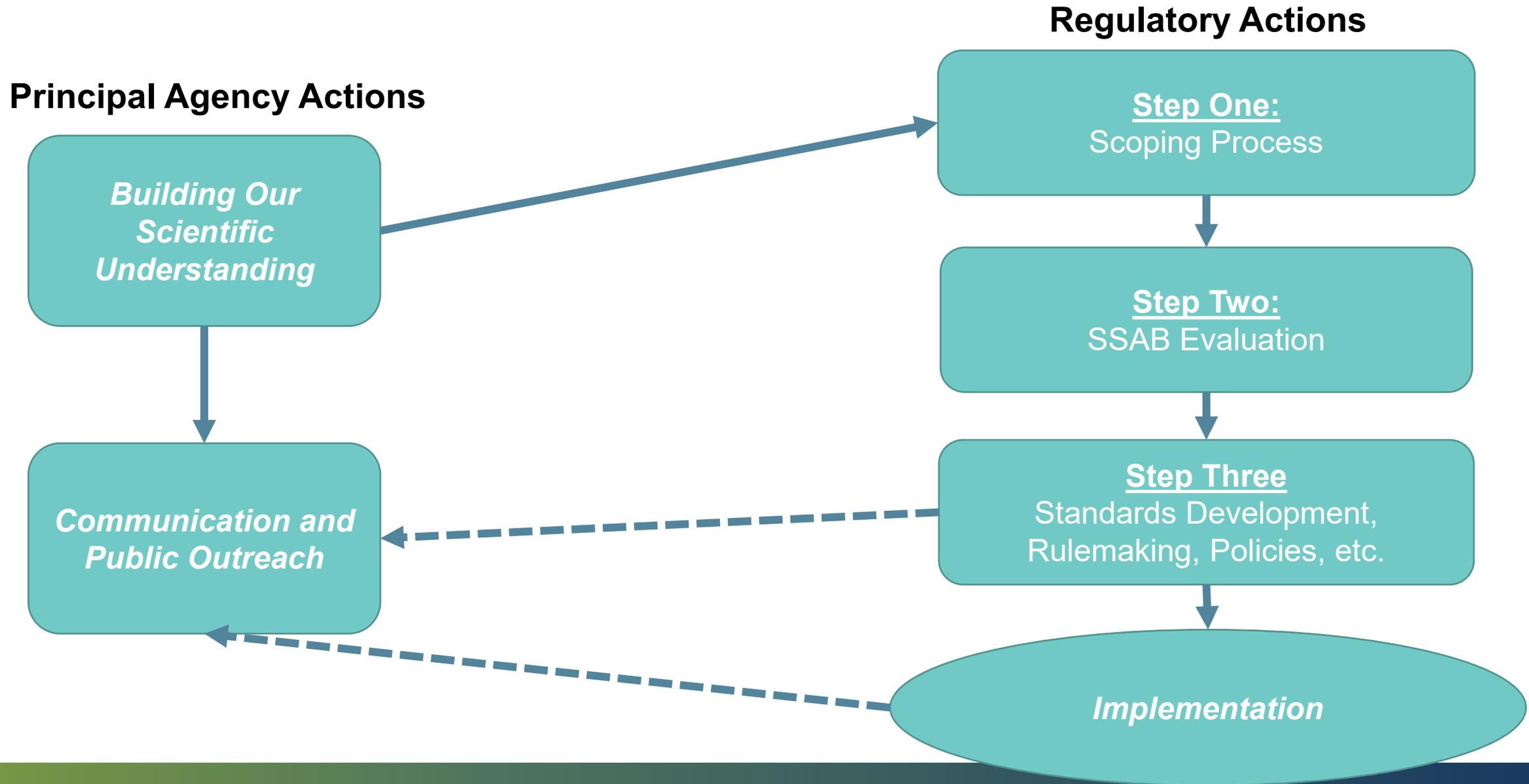
We will work to minimize future releases of PFAS to drinking water sources by setting regulatory standards and driving actions to prevent future PFAS pollution.



CLEANING UP EXISTING CONTAMINATION

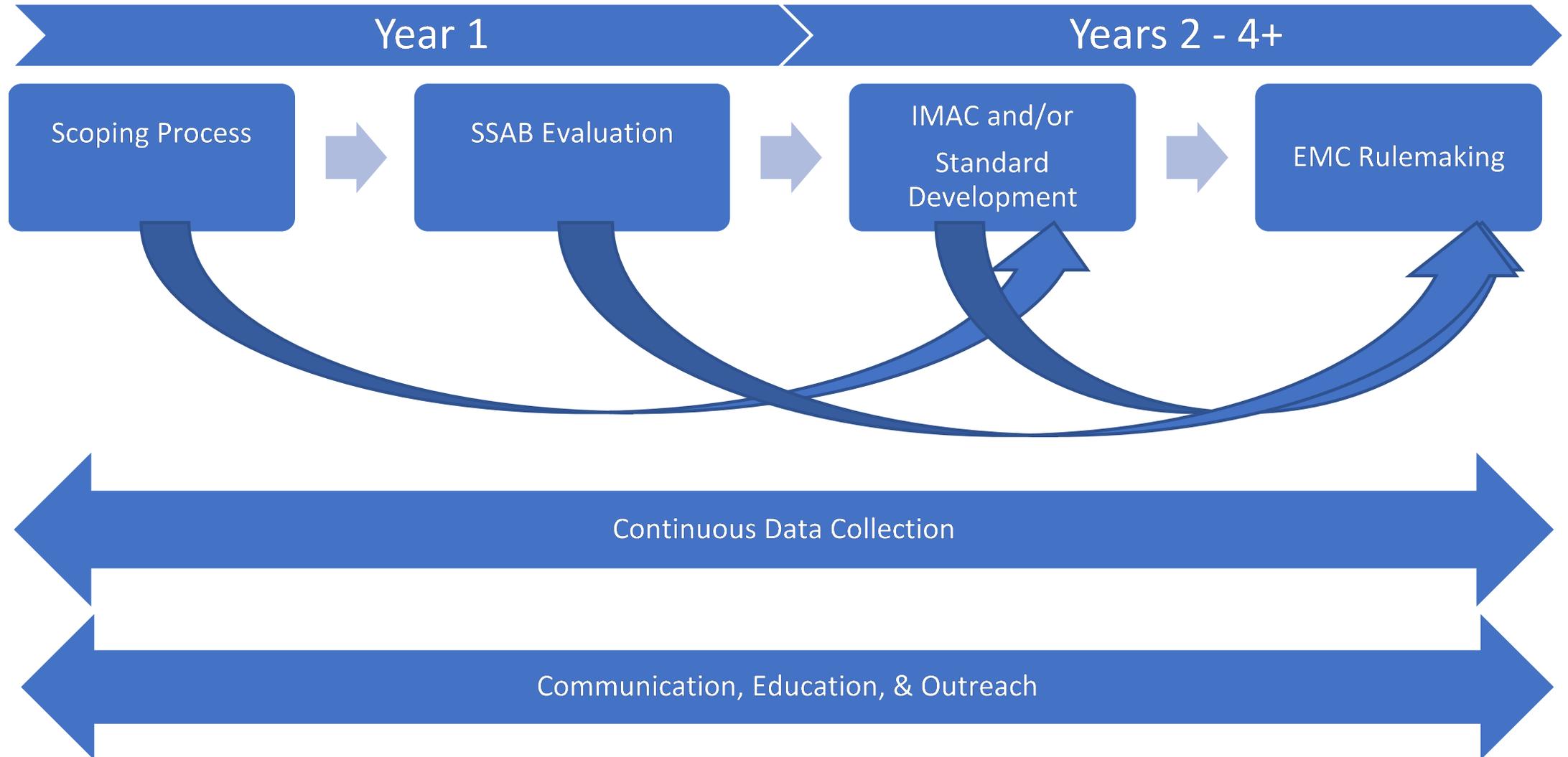
We will continue to hold responsible parties accountable for remediating known PFAS contamination sites affecting drinking water supplies and other receptors to protect human health and the environment.

Key Components of the Framework

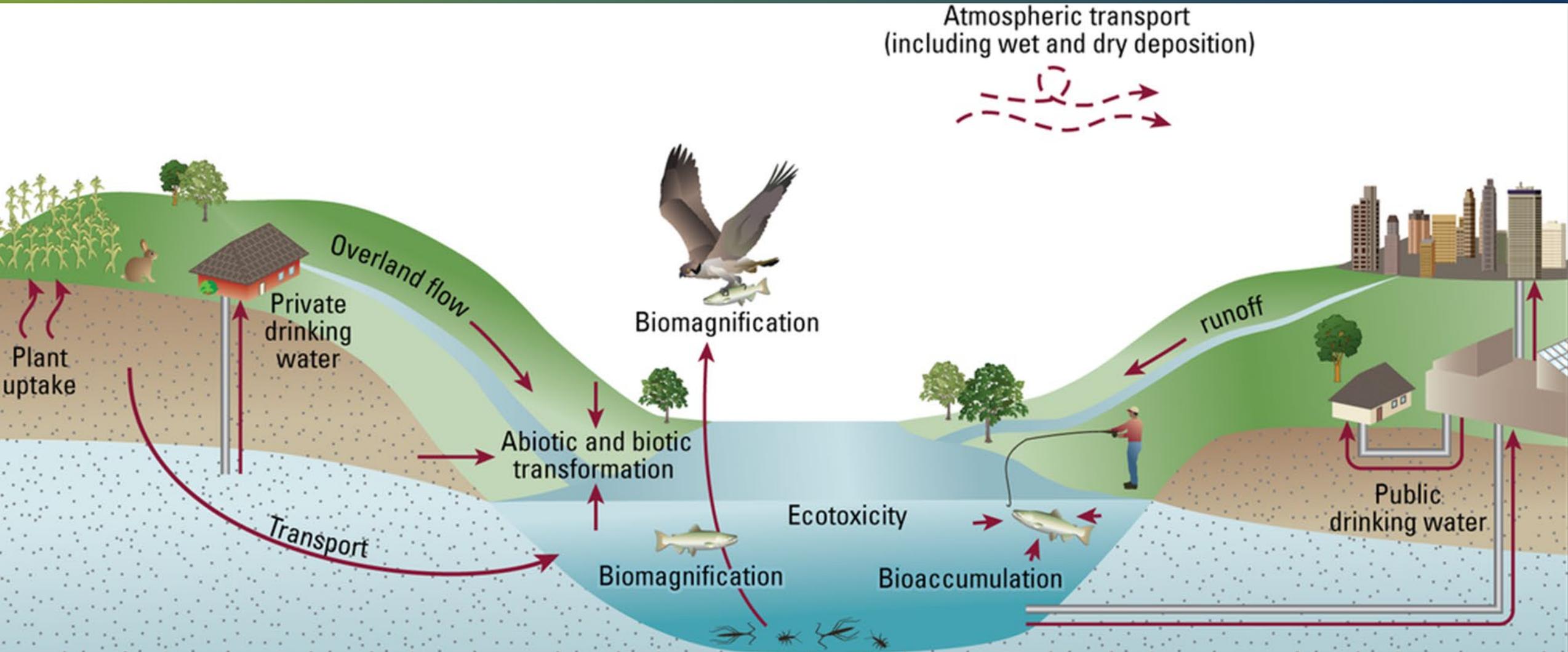


Emerging Contaminant Timeline

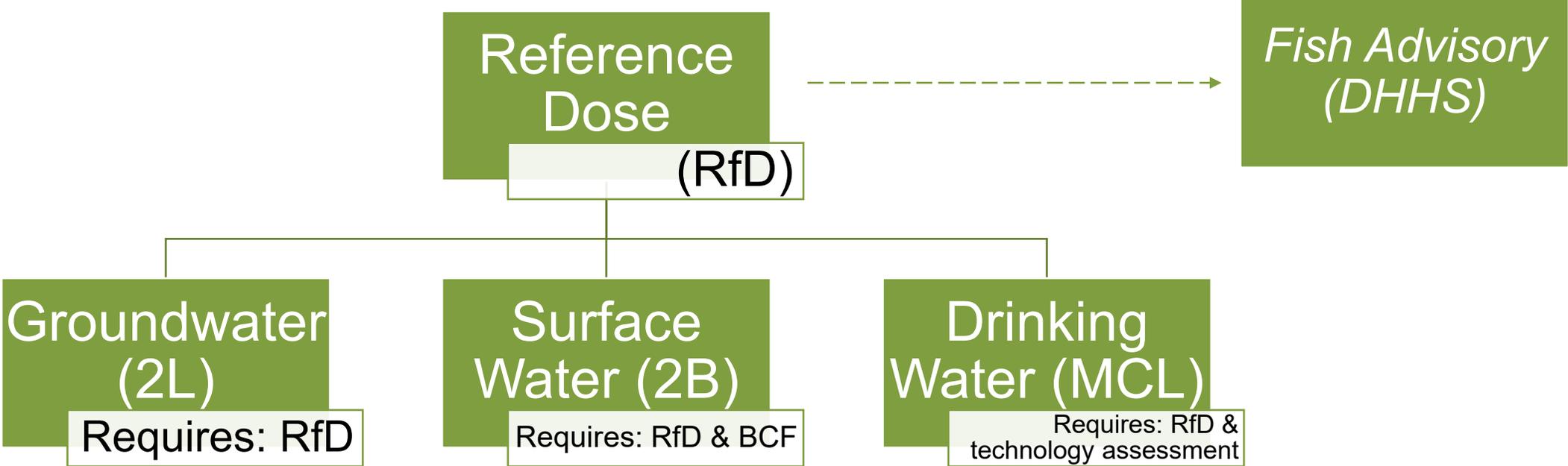
A conceptual timeline indicating the estimated times of each step in the Framework, arrows indicate concurrent activities.



DEQ's PFAS Regulatory Path Options



The Important of Reference Doses in NC Standard Development



PFAS in North Carolina

PFBS	PFHxS	PFHpA	PFMOAA	PMPA	PFOS
PFOA	PFO2HxA	PFBA	PEPA	PFO3OA	PFHxA
PFNA	GenX	PFO4DA	PFO5DA	HydroEVE	PFDA
		PFPeA	Nafion BPs		

PFAS in North Carolina

EPA PFAS RoadMap Compounds

PFBS

PFHxS

PFOS

PFOA

PFBA

PFHxA

PFNA

GenX

PFDA

Non-EPA PFAS RoadMap Compounds

PFHpA

PFMOAA

PMPA

PFO2HxA

PEPA

PFO3OA

PFO4DA

PFO5DA

HydroEVE

PFPeA

Nafion BPs

DEQ's Regulatory Priorities – Chemours PFAS

The Consent Order PFAS Compounds are unique to NC & EPA is not evaluating them.

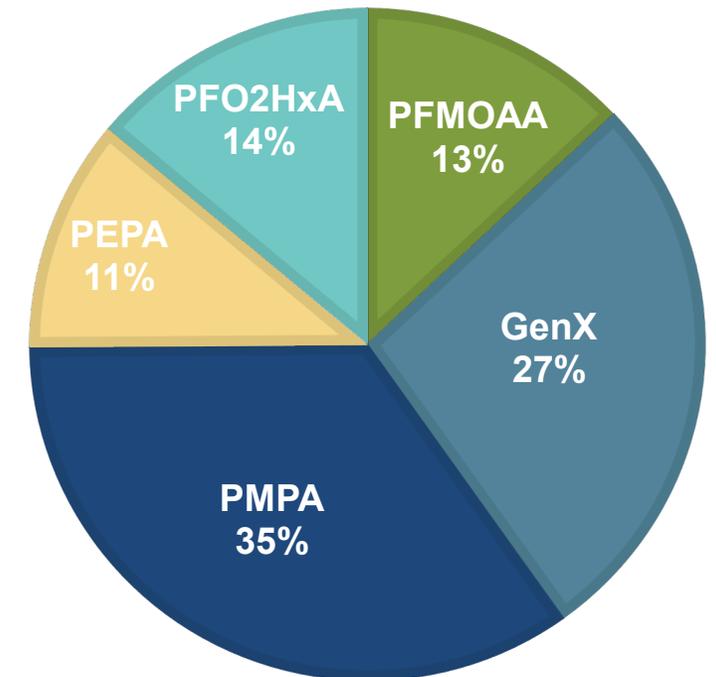
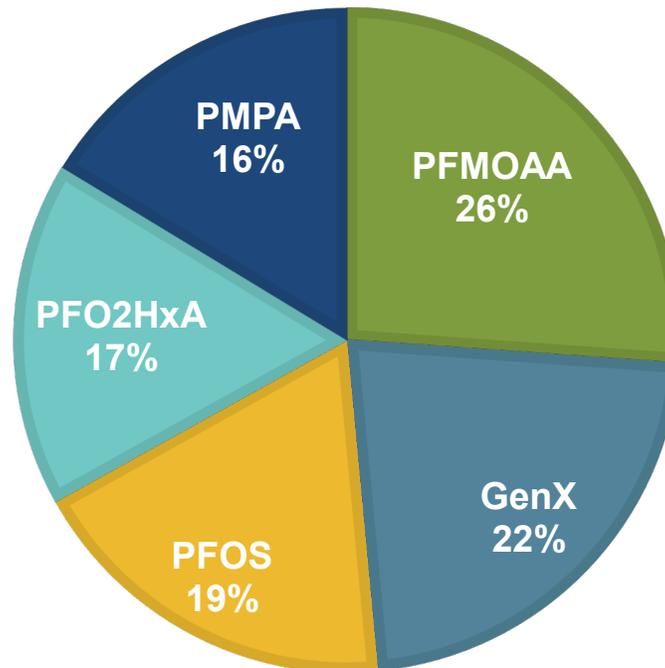
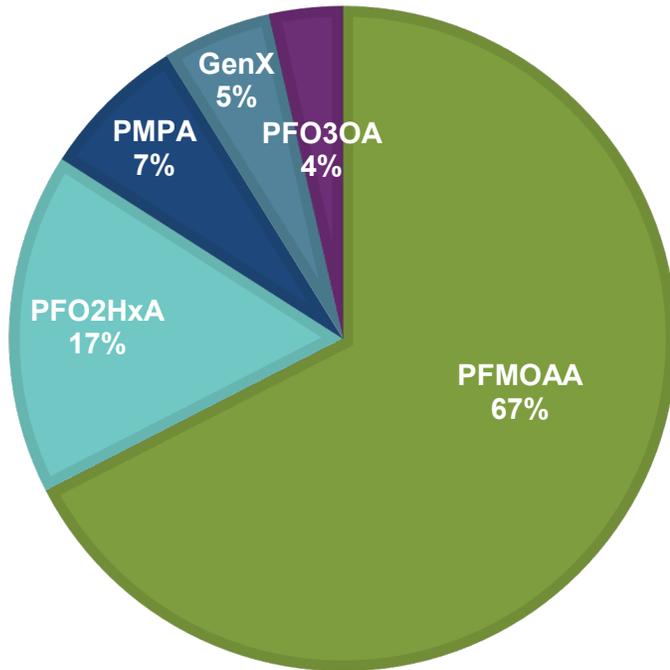
Top 5 PFAS in Surface water bodies

Top 5 PFAS in well water

HUSKE DAM BOAT RAMP

DOWNSTREAM CFR

RESIDENTIAL WELL WATER



PFAS in North Carolina

DEQ's Priority PFAS Group 1

Non-EPA PFAS RoadMap Compounds

PFHpA	PFMOAA	PMPA
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PFO2HxA	PEPA	PFO3OA
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PFO4DA	PFO5DA	HydroEVE
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PFPeA

Nafion BPs



PFAS in North Carolina

DEQ's Priority PFAS Group 1

PFMOAA

PMPA

PFO2HxA

PEPA

PFO3OA

PFAS in North Carolina

DEQ's Priority PFAS Group 1

PFMOAA

PMPA

PFO2HxA

PEPA

PFO3OA

- These are PFAS that are specific to NC and the waterbodies sampled in the lower Cape Fear region.
- There is not much existing toxicity information for these PFAS.

PFAS in North Carolina

EPA PFAS RoadMap Compounds

PFBS

PFHxS

PFOS

PFOA

PFBA

PFHxA

PFNA

GenX

PFDA

- EPA is conducting the toxicity assessment and providing the RfD and other health-based values.
- The rulemaking process is simplified for these PFAS as they are being federally regulated.

EPA PFAS Actions



- Proposed CERCLA Hazardous Substance Designation for PFOA and PFOS.
- Published draft aquatic life water quality criteria for PFOA and PFOS.
- Drinking Water Health Advisories & RCRA designation.
 - PFOS, PFOA, PFBS, GenX
- \$1 Billion in Bipartisan Infrastructure Law Funding.
- UCMR5 - report 29 PFAS in drinking water systems.
- Issued the first Toxic Substances Control Act PFAS test order.
- Added five PFAS to EPA's contaminated site cleanup tables (RSL, RRML).

**PFAS Strategic Roadmap:
EPA's Commitments to Action
2021-2024**



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Thank you

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