

PFMOAA Technical Meeting

NC Secretaries' Science Advisory Board

October 13, 2026

Frannie Nilsen, PhD



PFMOAA Technical Meeting Agenda



1. Overview of PFMOAA Topic Meeting
2. PFMOAA Occurrence in NC
3. PFMOAA Charge History with the Board
4. External PFMOAA Items Status
5. PFMOAA Charge Logistics Discussion

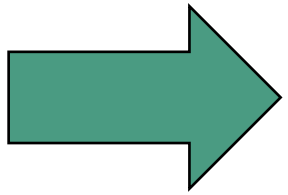
PFMOAA Technical Meeting Overview

This technical meeting will include the PFMOAA charge previously brought to the Board, and related information.

Since the meeting is shorter than a regularly scheduled NCSSAB meeting, the public can submit questions to publicaffairs@deq.nc.gov and they will be answered at the next full Board meeting (December 2, 2026).

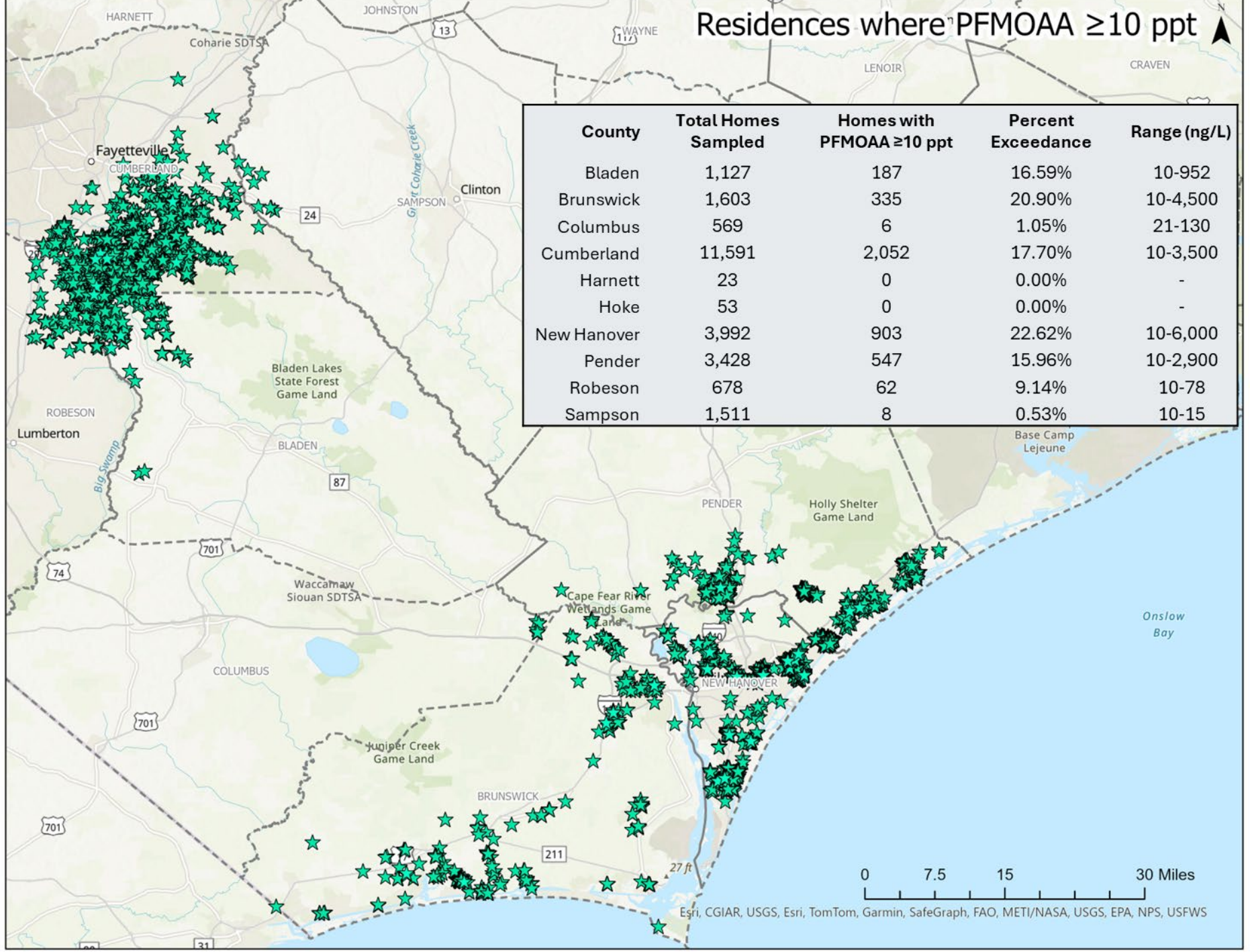
PFMOAA Occurrence in North Carolina

Consent Order
PFAS
(Attachment C)



PFMOAA	PMPA	PFO2HxA
PEPA	PFO3OA	PFO4DA
PFO5DA	PFECA-G	PFHpA
Nafion BP1	Nafion BP2	GenX

PFMOAA Occurrence in NC



County	Total Homes Sampled	Homes with PFMOAA ≥10 ppt	Percent Exceedance	Range (ng/L)
Bladen	1,127	187	16.59%	10-952
Brunswick	1,603	335	20.90%	10-4,500
Columbus	569	6	1.05%	21-130
Cumberland	11,591	2,052	17.70%	10-3,500
Harnett	23	0	0.00%	-
Hoke	53	0	0.00%	-
New Hanover	3,992	903	22.62%	10-6,000
Pender	3,428	547	15.96%	10-2,900
Robeson	678	62	9.14%	10-78
Sampson	1,511	8	0.53%	10-15

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Sampson	1,511	8	0.53%	10-15
TOTAL	**24,575**	**4,100**	**0.5 – 22.5%**	**10 – 6,000**

PFMOAA History with NC SSAB

- ***Dec 2024:*Charge Question:**

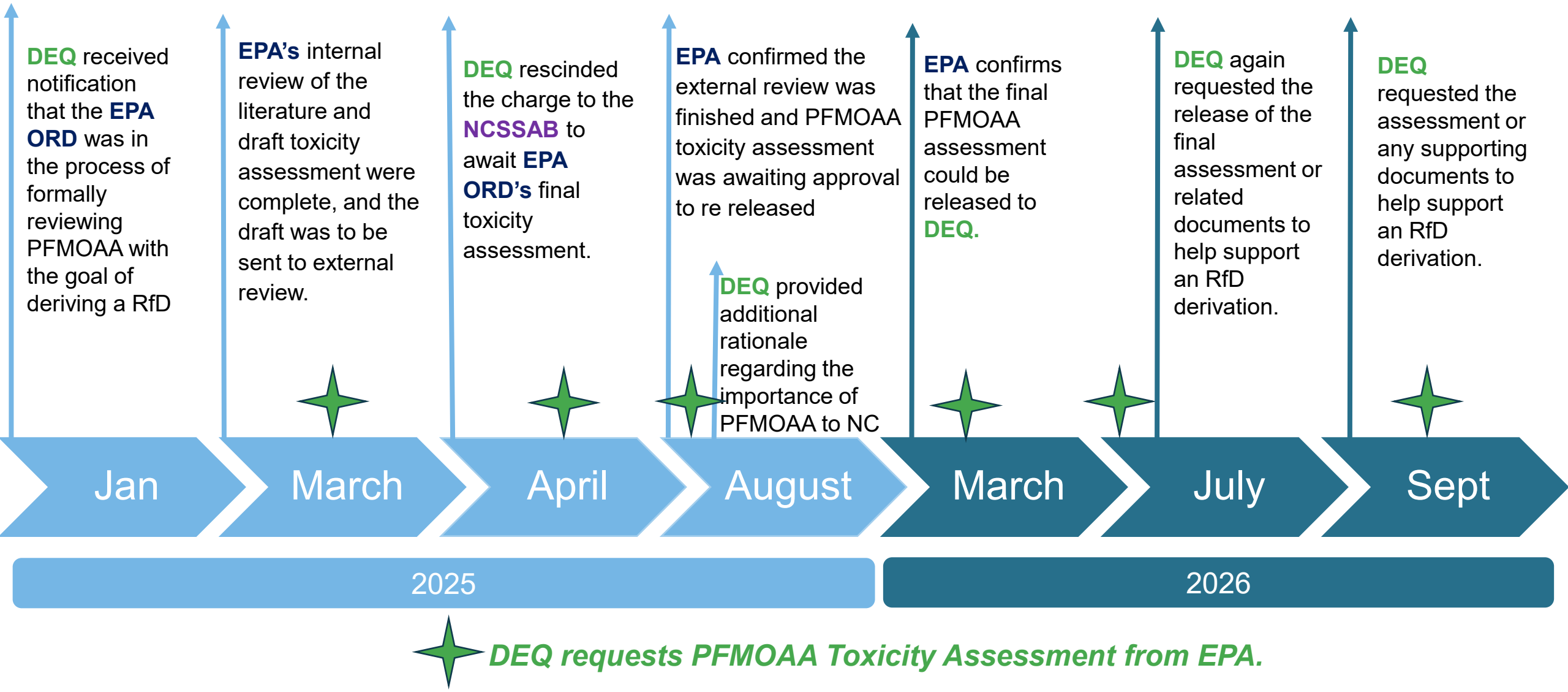
With the studies from Woodlief et al, Yao et al, and Conley et al, is there enough scientific support to identify a Point Of Departure for deriving a Reference Dose for PFMOAA?

- ***DEQ proposed PFMOAA to the EPA as a priority compound to review (circa 2022-2023).***
- ***In January 2025, DEQ received notification that the EPA Office of Research and Development (ORD) was in the process of formally reviewing PFMOAA with the goal of deriving a RfD.***
- ***As of Mid-March 2025, the internal review of the literature and draft toxicity assessment were completed, and the draft was to be sent to external review.***

April 2025 NC SSAB Meeting:

- ***DEQ rescinded the previous charge to the Board and await EPA ORD's final toxicity assessment before asking the Board for a review and/or recommendation.***

Timeline of PFMOAA Toxicity Assessment Requests



External PFMOAA Items Status



PFMOAA national monitoring in UCMR6



Final EPA analytical method to detect PFMOAA and other “ultra short chain PFAS”



EPA ORD Toxicity Assessment Status

UCMR6 PFAS

bistriflimide (TFSI)	82113-65-3	0.003 µg/L	EP	EPA 563	Ultrashort organofluorine compounds
perfluoro-2-methoxyacetic acid (PFMOAA)	674-13-5	0.06 µg/L	EP	EPA 563	Ultrashort organofluorine compounds
perfluoroethanesulfonic acid (PFEtS)	354-88-1	0.02 µg/L	EP	EPA 563	Ultrashort organofluorine compounds
perfluoropropanesulfonic acid (PFPrS)	423-41-6	0.01 µg/L	EP	EPA 563	Ultrashort organofluorine compounds
perfluoropropanoic acid (PFPrA)	422-64-0	0.08 µg/L	EP	EPA 563	Ultrashort organofluorine compounds
trifluoromethanesulfonic acid (TFMS)	1493-13-6	0.02 µg/L	EP	EPA 563	Ultrashort organofluorine compounds
trifluoroacetic acid (TFA)	76-05-1	0.2 µg/L	EP	EPA 563	Ultrashort organofluorine compounds

NORTH CAROLINA
Department of Environmental Quality

EPA Method 563:

New EPA method that quantifies the smaller "ultrashort" PFAS that were not included in previous methods.

United States Environmental Protection Agency

METHOD 563: DETERMINATION OF SELECTED ULTRASHORT ORGANOFLUORINE COMPOUNDS IN DRINKING WATER BY LIQUID CHROMATOGRAPHY/TANDEM MASS SPECTROMETRY

1.1 Analyte List

Analyte[a]	Abbreviation	CASRN
Bistriflimide[b]	TFSI	82113-65-3
Perfluoroethanesulfonic acid	PFEtS	354-88-1
Perfluoro-2-methoxyacetic acid	PFMOAA	674-13-5
Perfluoropropanoic acid	PFPrA	422-64-0
Perfluoropropanesulfonic acid	PFPrS	423-41-6
Trifluoroacetic acid	TFA	76-05-1
Trifluoromethanesulfonic acid	TFMS	1493-13-6

NORTH CAROLINA Department of Environmental Quality

ORD Toxicity Assessment

DEQ has requested access to the Assessment, and/or the literature evaluation and weight of evidence analysis.

To date, EPA has not responded to DEQ's request.

DEQ must proceed forward as though EPA will not release the completed Assessment.

Revised Charge to the Board:

With the studies current literature base, is there enough scientific support to identify a Point Of Departure for deriving a Reference Dose for PFMOAA?

PFMOAA Charge Logistics Discussion

Does the NCSSAB have the availability and bandwidth to:



1. CONDUCT A REVIEW OF THE NEW LITERATURE?



2. FORM A FOCUSED TEAM TO EVALUATE THE LITERATURE, AND



3. DERIVE AN RFD USING EPA'S BENCHMARK DOSE MODELING SOFTWARE?

PFMOAA Charge Logistics Discussion

Does the NCSSAB have the availability and bandwidth to:

Small team formed to create review document (JV, EK, JD), DEQ, DHHS



1. CONDUCT A REVIEW OF THE LITERATURE, DETERMINE ADEQUACY FOR RFD DERIVATION



2. ADVISE THE STATE ON THE VARIOUS APPROPRIATE PATHS TO DERIVE AN RFD

Summary document by Nov 13 for Board review



3. DERIVE AN RFD USING AN APPROPRIATE METHOD

PFMOAA Updated Literature Search (August 2026)

1. Woodlief T, Vance S, Hu Q, DeWitt J. 2021. Immunotoxicity of per- and polyfluoroalkyl substances: Insights into short-chain PFAS exposure. *Toxics* 9(5):100.
2. Yao J, Pan Y, Sheng N, Su Z, Guo Y, Wang J, Dai J. 2020. Novel perfluoroalkyl ether carboxylic acids (PFECAs) and sulfonic acids (PFESAs): Occurrence and association with serum biochemical parameters in residents living near a fluorochemical plant in China. *Environmental Science & Technology* 54 (21): 13389-13398.
3. Justin M. Conley, Christy S. Lambright, Nicola Evans, Jacqueline Bangma, Jermaine Ford, Donna Hill, Elizabeth Medlock-Kakaley, and L. Earl Gray Jr. 2024. Maternal and neonatal effects of maternal oral exposure to PFMOAA during pregnancy and early lactation in the Sprague-Dawley rat. *Environmental Science & Technology* 58 (2), 1064-1075.
4. Killius, A., M. Wheeler, L. Covell, S. Price, and B. Finley. 2026. " Derivation of Provisional Chronic Oral Toxicity Values (PCOTV) for Novel Short-Chain PFAS Congeners." *Journal of Applied Toxicology* 1–9. https://doi.org/10.1002/jat.70156.
5. Matthew Farrell, Ria Bakshi, Emily Griffith, Antonio Planchart. Developmental Toxicity and Lethality of Structurally Diverse PFAS in Zebrafish. bioRxiv 2025.08.07.669106; doi: https://doi.org/10.1101/2025.08.07.669106
6. Tess C Leuthner, Sharon Zhang, Brendan F Kohrn, Heather M Stapleton, L Ryan Baugh, Structure-specific variation in per- and polyfluoroalkyl substances toxicity among genetically diverse *Caenorhabditis elegans* strains, *Toxicological Sciences*, Volume 205, Issue 1, May 2025, Pages 205–219, https://doi.org/10.1093/toxsci/kfaf014
7. Qin W, Henneberger L, Glüge J, König M, Escher BI. Baseline Toxicity Model to Identify the Specific and Nonspecific Effects of Per- and Polyfluoroalkyl Substances in Cell-Based Bioassays. Environ Sci Technol. 2024 Apr 2;58(13):5727-5738. doi: 10.1021/acs.est.3c09950. Epub 2024 Feb 23. PMID: 38394616; PMCID: PMC10993398.