



April 2, 2025

Chemours Consent Order Toxicity Studies – Status Update and Results

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Consent Order Toxicity Studies

Current Status Updates – April 2025

1. Aquatic Toxicology studies
2. Rodent Toxicology studies

Current Results Summaries – April 2025

1. Aquatic Toxicology studies
 1. Chronic Daphnia

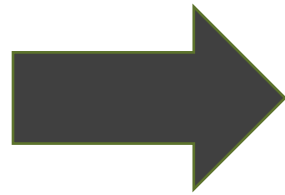
Previously Presented Results Summaries – Dec 2024

1. Aquatic Toxicology studies
 1. Algae
 2. Acute Daphnia
 3. Fish



PFAS in North Carolina

Consent Order
Paragraph 14
Study PFAS



PFMOAA

PMPA

PFO2HxA

PEPA

Nafion BP2

Chemours Consent Order: Toxicity Study Details

“The following studies, which shall be conducted following applicable USEPA, OECD protocols as defined in the USEPA TSCA, OPPT or other appropriate programs as determined by DEQ.”

Rodent Toxicity Studies:

- 28-day oral immunotoxicity study in rats
- 28-day oral immunotoxicity study in mice
- 90-day repeated dose oral toxicity study in rats
- 90-day repeated dose oral toxicity study in mice

*Rodent Studies: mouse and rat;
classic and immuno-toxicity*

Ecological Toxicity Studies:

- Algal acute (72-hour growth) toxicity study
- Daphnid acute toxicity study
- Daphnid chronic (reproduction) toxicity study
- Fish acute toxicity study
- Sediment 10-day freshwater invertebrates toxicity test

*Aquatic Tox Studies:
algae, zooplankton, fish, earthworms*



Current Status of Consent Order Aquatic Toxicity Studies

Aquatic Studies

Algae

Daphnid
(acute)

Daphnid
(chronic)

Fish

Sediment

Approval Steps:

- Protocols Approved – April & Dec 2022
- Range Finding Tests and Dose Approval – Jan – July 2023
- Definitive Tests Conducted – April – Nov 2023
- Final Report to DEQ – Algae Jan 2024; Acute Daphnia and Fish July 2024
 - others throughout 2024



Current Status of Consent Order Aquatic Toxicity Studies

Approval Step	Algae	Daphnia (acute)	Daphnia (chronic)	Fish	Sediment
Final Protocol Approval	April 2022	Dec 2022	Dec 2022	April 2022	Dec 2022
Range Finding Reports	Jan/Feb 2023	March-May 2023	May 2023	April/May 2023	Oct 2024
Analytical Method for Dose Validation	Feb 2023	May 2023	May 2023	May 2023	May 2023
Dose Approval for Definitive Tests	March 2023	June 2023	June 2023	Aug 2023	Aug 2024
Definitive Tests Conducted	May/July 2023	Sept 2023	Sept/Oct 2023	Aug-Oct 2023	<i>underway</i>
Final Reports to DEQ	January 2024	July 2024	August 2024	July 2024	

Current Status of Consent Order Rodent Toxicity Studies

Rodent Studies

*Mouse 28-day
Immune Tox*

*Rat 28-day
Immune Tox*

*Mouse 90-day
Classic Tox*

*Rat 90-day
Classic Tox*

Approval Steps:

- Range Finding Tests and Analytical Method Validation
- Definitive Dose Approval
- Final Protocol Approved
- Definitive Tests Conducted
- Final Report to DEQ



Current Status of Consent Order Rodent Toxicity Studies

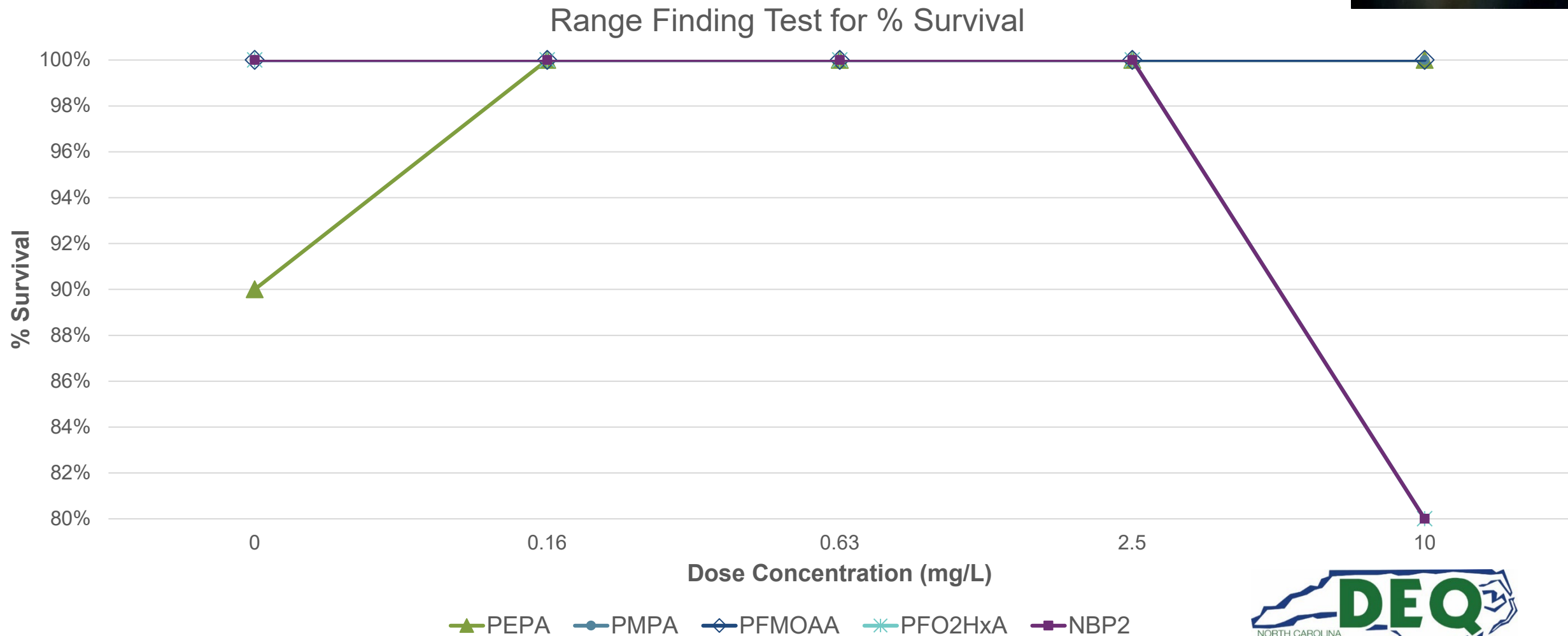
Rodent Studies		Step	Nafion BP2	PFMOAA	PMPA	PEPA	PFHO2xA
		Analytical Method for Dose Validation	DEQ received July 2023; Approved HPLC-CAD Method				
Mouse 28-day Immune Tox		Range Finding Reports	DEQ received July 28, 2023		DEQ received Oct 6, 2023		
Rat 28-day Immune Tox		Dose Approval for Definitive Tests	Meeting/Approval October 27, 2023		Meeting/Approval August 8, 2024		
Mouse 90-day Classic Tox		Final Protocol Approval	Nov/Dec 2023		Next step		
Rat 90-day Classic Tox		Definitive Tests Conducted	June 2024		<i>28-day tests first; 90-day tests will be informed by the 28-day dose-response</i>		
		Final Reports to DEQ	<i>Expected Fall/Winter 2024</i>				

Chronic Daphnia Results – 7-day toxicity test

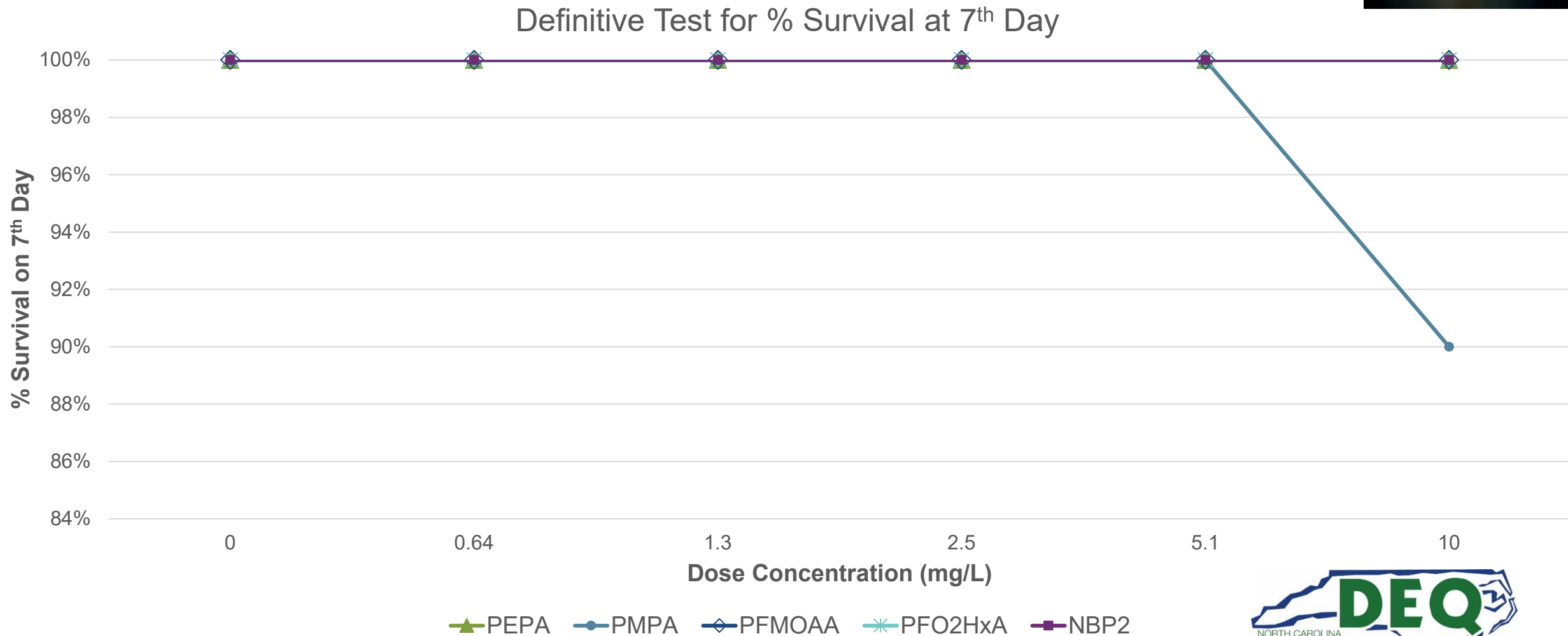
- Conditions for Validity of test: **Met for all CO PFAS Compounds**
 - Immobility and/or signs of disease or stress in the control group will not exceed 20% by the end of the test.
 - The dissolved oxygen concentration will be ≥ 4.0 mg/L throughout the test.
 - Offspring produced per parent must be 15+.
 - Concentration in test chamber not vary more than 20%
 - 60% of surviving females must produce 3 broods.



Daphnia Results – 7-day toxicity test – Measures Survival



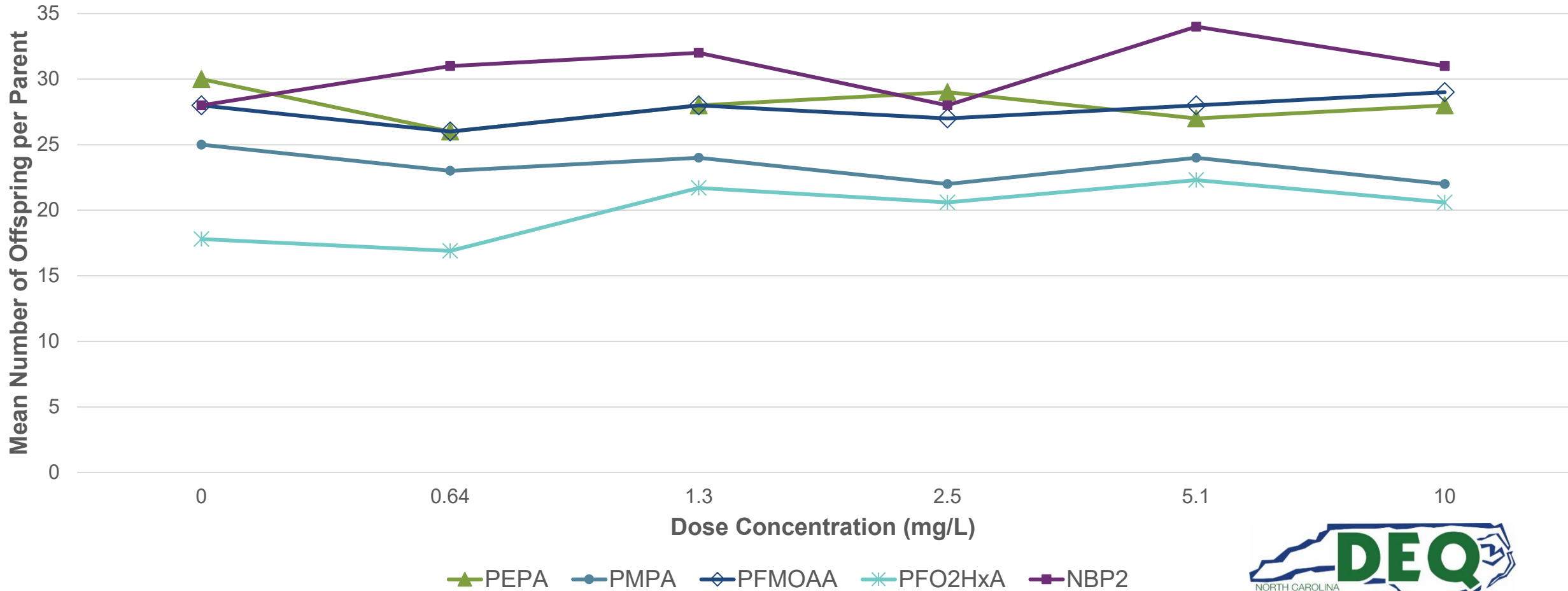
Daphnia Results – 7-day toxicity test – Measures Survival



Daphnia Results – 7-day toxicity test – Live Offspring



Definitive Test for Mean Number of Live Offspring per Surviving Parent



Next Steps: Procedural for the Consent Order

Next Steps:

1. Approve remaining aquatic toxicity final protocol (sediment) – Winter 24/25- *approved Nov 2024*
2. Review first rodent toxicity final report (NBP2, rat) – Winter 24/25 – *expected soon!*

Remaining Studies with Forthcoming Results

Ecological Toxicity Studies:

- Sediment 10-day freshwater invertebrates toxicity test

Rodent Toxicity Studies:

- 28-day oral immunotoxicity study in rats
- 28-day oral immunotoxicity study in mice
- *90-day repeated dose oral toxicity study in rats*
- *90-day repeated dose oral toxicity study in mice*





The results inform the environmental impacts of the Chemours PFAS contamination in the Cape Fear River.

*Aquatic
Toxicology
Results –
What do
these results
mean?*



All 5 of the required aquatic toxicity tests will provide the basis for understanding how the Chemours PFAS compounds have impacted the different trophic levels in the freshwater ecosystem.



These results could be used to derive Bioconcentration Factors (analogous to the Bioaccumulation Factors that DEQ has derived from the 2022/2023 Fish Sampling effort).



These results are unlikely to be used to derive human health values without rodent data to corroborate the findings.

Thank you



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