



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

Secretaries' Science Advisory Board Official Recommendation

Subject: Use of EPA's Bioaccumulation Factors (BAF) in North Carolina's waterbodies

Date: June 7, 2023

Summary:

During the October 3, and December 5, 2022, and February 8, and April 5, 2023, Secretaries' Science Advisory Board (Board) meetings, the Board discussed the Bioaccumulation Factor data presented in the EPA's Draft Aquatic Life Criteria for PFOS and PFOA to determine if they are appropriate to apply in North Carolina. The questions posed by the NC Department of Environmental Quality (NCDEQ) and the Board's summarized discussions are provided below. The DEQ responded to the Board's requests for additional analyses and data comparisons throughout the meetings to aid in their discussion of the BAF's use in North Carolina.

The questions posed to the Board by NCDEQ during the October 3, 2022, meeting were:

- 1) Does the SSAB support the use of EPA literature for the foundation for BAFs for NC?
- 2) Is the method that DEQ applied to the EPA's vetted BAF data a scientifically sound approach for NC BAFs?
- 3) Is the EPA's method of using the geometric mean as the BAF appropriate for use in NC waterbodies with PFOA & PFOS?

The Board's response:

To address the first question, the Board reviewed the quality ranking system implemented by the EPA for the BAF data presented in the EPA's Draft Aquatic Life Criteria for PFOS and PFOA, and the use of only medium and high-quality data from that ranking system. The Board concurred in support of DEQ using the EPA's BAF data in NC, as their method was determined to be scientifically sound and appropriate.

To address the second question, the Board reviewed the dataset that DEQ presented, which was filtered from the EPA's entire BAF dataset to include only those species that are found in NC. To further examine the appropriateness of the EPA's BAF data for NC, the Board also reviewed the calculations for the entire EPA BAF dataset, as well as the BAF calculations from the DEQ Cape Fear River fish tissue samples. Using all these data, the Board concluded that the values from the three datasets are similar and determined that using either the EPA's entire BAF dataset, the dataset filtered for species specific to NC, or the DEQ Cape Fear River BAF data is appropriate and scientifically sound to represent NC waterbodies.

To address the third question, the Board discussed the value of using a variety of central tendency statistics as the basis of the BAF. Several central tendency statistics were determined to be potentially appropriate for use. To further examine this question, the Board reviewed the method employed by the EPA to calculate BAFs, which is use of the geometric mean. Through discussion, the Board determined that the EPA's method of using the geometric mean for BAF calculation is appropriate to represent NC's waterbodies.

The Board formally approved these recommendations during the June 07, 2023, Meeting.

The following values were calculated using the geometric mean which is supported by the Board regarding BAFs in NC waterbodies.

PFAS Compound	Dataset Used in Calculation	BAF derived from Geometric Mean
PFOS	Entire EPA BAF dataset	1555
	EPA BAF dataset filtered for NC species	1962
	DEQ Cape Fear River BAF Data	1539
PFOA	Entire EPA BAF dataset	15
	EPA BAF dataset filtered for NC species	13
	DEQ Cape Fear River BAF Data	36

The recordings of the four Board discussions of the topic are available here: [October 3, 2022 Meeting Recording at 1:00:00](#), [December 5, 2022 Meeting Recording at 01:34:33](#), [February 7, 2023 Meeting Recording at 01:13:49](#), [April 5, 2023 Meeting Recording at 00:35:30](#), [June 7, 2023 Meeting Recording at 00:52:56](#).

References:

[EPA 2022 Draft Aquatic Life Ambient Water Quality Criteria Recommendations for Perfluorooctane Sulfonate \(PFOS\)](#)

[EPA 2022 Draft Aquatic Life Ambient Water Quality Criteria Recommendations for Perfluorooctanoic Acid \(PFOA\)](#)

[October 3, 2022, BAF Presentation to NC SSAB](#)

[February 7, 2023, BAF Presentation to NC SSAB; Feb 7, 2023, Cape Fear River Fish Tissue Presentation](#)

[April 5, 2023, BAF Presentation to NC SSAB](#)



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