Message

**From:** Sun, Mei [msun8@uncc.edu]
**Sent:** 9/19/2016 1:06:08 PM
**To:** Lindstrom, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=04bf7cf26aa44ce29763fbc1c1b2338e-Lindstrom, Andrew]; Strynar, Mark [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5a9910d5b38e471497bd875fd329a20a-Strynar, Mark]
**CC:** Detlef knappe [knappe@ncsu.edu]
**Subject:** Re: Cape Fear manuscript EPA review
**Attachments:** ESTL_SI_0918.docx; TOC.png; ESTL_0918.docx

Hi Andy and Mark

We have been working on addressing the comments from your internal reviewer and made quite a few changes. Please see the latest draft in the attachment, and let us know if there is anything we need to do regarding your internal review process. We have also sent it to the facilities to see if they have any opinions. If everything is fine, we are hoping to submit it within a week or so. Thank you.

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On Tue, Sep 6, 2016 at 3:16 PM, Lindstrom, Andrew <Lindstrom.Andrew@epa.gov> wrote:

> Mei,
>
> Thank you for your patience with us.
>
> I will compile a line by line list of the changes you have made in the document but please feel free to only make that changes that make sense to you or that we have space to accommodate.
>
> I'll have to come up with a memo which describes how the document was changed in response to the EPA comments, so anything you can give me that helps with this task would be very helpful. That said, this is our internal process so you shouldn't have to worry about the form or how we do this.

Please let me know if you have any questions.

Thank you,

Andy

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**From:** Sun, Mei <msun8@uncc.edu>
**Sent:** Tuesday, September 6, 2016 10:21:41 AM
**To:** Lindstrom, Andrew; Strynar, Mark
**Cc:** Detlef knappe
**Subject:** Re: Cape Fear manuscript EPA review

Hi Andy and Mark

We are working on the revision based on the reviews and should be done soon. One question about your internal review process: do we need to provide an item-by-item response to the reviewers on the chances we made based on their comments? Thank you.

Mei Sun

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On Mon, Aug 29, 2016 at 2:09 PM, Lindstrom, Andrew <Lindstrom.Andrew@epa.gov> wrote:

> Mei,
>
> We need to get the Cape Fear manuscript cleared by the EPA review system before it can be submitted to the journal. Please be aware that our review process is complicated and ambiguous and most often our academic coauthors end up submitting the manuscript before EPA gives official approval.
>
> I have summarized the first round of comments from 5 preliminary reviewers below. Yes, *5 preliminary* reviews. And this just gets us to the point where it can then go on to the upper level managers in OW and

ORD for their evaluation. Anything dealing with PFAS is now considered "sensitive" so it will be subjected to this intensive review process.

Most of these the comments below are minor and helpful but some may not reflect a lot of understanding of the topic or an appreciation of the constraints of the ES&TL format. We are nonetheless required to ask you to consider them and make the suggested changes if possible.

These are all based on the ESTL_0726.docx version of the document. (It is worth noting that it's easier to work with comments when the document is double spaced and sequential line numbers are provided).

Reviewer 1 (AB)

Looks pretty good. I made comments directly on the manuscript. Two points are worth pointing out. First, you will need to make sure that there is a disclaimer. Second, I think you are going to need more details on when, where and how the samples were actually taken. Given the implications of this paper, I think it prudent to be as specific as you can be about the sampling. There is very little information about how the water samples were collected, replication or location relative to the communities and the DWTPs. Figure S2 is generally useful for understanding the very general layout of the watershed and the relative position of communities and the production plant, it is not particularly useful in relating your sampling to these features in the watershed. Also, not sure if it is intentional, but the DWTPs were not indicated on the map.

Also, just a question, did you see any seasonal variability in concentration between low and high flow. Might be interesting to look at that since I am guessing that the sources for Communities A and B are different than C (downstream of the plant) and would maybe be expected to be more affected by rain events and runoff. Seems like the constancy of input from the plant might be another way to link surface water concentrations to the source.

Specific comments:

Introduction, second paragraph, line 8 "Might be useful to point out that this is part of the current study and not historical. It's sort of buried in the background part of the intro."

Materials and Methods, second paragraph, line 2, "Were samples collected in duplicate or triplicate. Were they collected at the same location each time. Is there flow information available. SI2 is very vague, and while useful for understanding the layout of the watershed, it isn't particularly useful to understand where you sampled, how often and the general geographic relationships between sampling and DWTPs and communities. Considering the potential impact on these communities and the implications from the publication of this work, it makes sense to be as precise and descriptive as possible – maybe an SI table?"

Materials and Methods, PFAS quantitation paragraph, line 10, "Do you describe the treatment train and where throughout it that you sampled. I am assuming that you had access to the facility in order to collect the samples."

Results and Discussion, first paragraph, line 4, "Do you think adding coefficient of variation or some other measure to the table would be useful in getting an idea of the distribution of measurements? Not sure if it would add that much given the stats you have in there."

Results and Discussion, second paragraph, last line, "I am curious if there was seasonal variability in concentrations of the these compounds in surface waters. It seems that if you are attributing the PFPrOPrA concentrations to a specific source, then the output from that source would be relatively

constant and you could correct for variation in flow rates to figure the input from that source or extrapolate from low to high flow. Might help link back to the source."

Results and Discussion, PFAS fate in an advanced DWTP section, second paragraph, fourth line, "Might want to point the reader to Figure 2b."

Acknowledgement "Obviously going to need the disclaimer before it is cleared."

Reviewer 2 (TB)

Title page, suggest changing the title to "Traditional and emerging perfluoroalkyl substances in the NC Cape Fear River Watershed: Occurrence and fate during conventional and advanced water treatment processes."

Abstract, line 10, "It is difficult to interpret this. Why not report median and IQR?"

Materials and Methods, "Describe why you chose this watershed. Was this a natural experiment to assess the imjpact of a source? What is your study design?"

Materials and Methods, Water samples paragraph, last line, "This is too important to not briefly describe here."

Materials and Methods, Adsorption experiments paragraph, last line, "Can you say something about relevance to what is used for DW treatment?"

Materials and Methods, PFAS quantification paragraph, last line, "Needs editing for better organization / flow. Include MS methods briefly."

Results and Discussion, first paragraph, second line, "In previous sentence you reference source intakes. Be consistent. I would stick with source intakes."

Results and Discussion, first paragraph, last line, "I don't know that you have provided data to support these conclusions. It looks to me like all the sites are source impacted."

Results and Discussion, second paragraph, second line, "However, high concentrations of newer PFC including PFPrOPrA were detected (up to ~4500 ng/L)."

Figure 1, figure legend, "Put the n= under "Coummunity" labels."

Figure 2, figure legend, "Add "n=""

Page 9, first paragraph, last line "Thus, when released to the environment, PFPrOPrA has a higher chance to remain in the aqueous phase and less efficient removal in drinking water treatment processes."

Page 10, first paragraph, second line, "This work documents the concentration of traditional PFASs over the course of the CFR treatment process, the emergence of PFECAs as replacements."

Reviewer 3 (KO)

General comments

Has permission been obtained from the treatment plants? Were they aware of what type of analyses were being done and the data being potentially being made public? This may be a concern given that the locations of the communities are not really anonymous given the map?

Abstract, line 17, "Without standards how much data on concentrations should be presented?"

Introduction, second paragraph, line 10, "Might be useful to point out that this is part of the current study and not historical. It's sort of buried in the background part of the intro. Or include this in the discussion section."

Material and Methods, section second paragraph, "Include volumes sampled, type of containers used Holding times of the samples any preservatives used? Or can you cite the 2007 paper and indicate if any modifications that were done. Differences between methods used in previous publications should be indicated. Were trip blanks were used and opened in the field during sample collection?"

Materials and Methods section, last paragraph, (top of page 5) "Additional information such as the standard curves, spikes and other elements that describe the way quantification was done would be helpful in light of the implications of the findings. I think PFPrOPrA and PFBA were not in the 2007 publication. If so then performance descriptions such as recovery should be included."

Results and Discussion second paragraph, third sentence, "Generally when an analyte is outside the calibration curve it is diluted and reanalyzed or described as >750 ng/L in this case."

Figure 2, figure legend, "Given that standards were not available and quantification is not possible presence/absence is frequently used for interpreting the findings such as these?. Also I don't believe matrix recovery data has been presented for the PFASs in panel B? Recovery efficiencies are important in order to interpret the results of the various PFASs and in the various locations of the treatment train."

Figure 3, "Can this level of quantitation be done for those compounds where standards aren't available? It would be very helpful if recovery information is provided even in raw numbers though without standards that still may be problematic. Having a better understanding of what method performance data is available on these compounds would be helpful to understand how best to present and interpret the data."

Reviewer 4 (JS)

Abstract, "Because of their persistence, bioaccumulation potential, and (eco)toxicity, long-chain perfluoroalkyl substances (PFASs) such as perfluorooctanoic acid and perfluorooctane sulfonate are being replaced with short-chain PFASs and other fluorinated alternatives."

Abstract, "Among the PFECAs without available authentic standards, three exhibited large chromatographic peak areas (up to 15 times the GenX peak area), suggesting these emerging PFASs are present at ~~possibly~~ high concentrations."

Introduction, paragraph 3, first line, "Isn't the study only about PFSAs?" also "Resistant may be a better word here."

Introduction, paragraph 3, last line, "Seems to drift off point here. At least according to the following paragraph where you say you are evaluating only PFSAs. If you are trying to appeal to readers that

are not well versed in PF compounds I suggest a more linear introduction and fewer acronyms. Just call them alternatives in the intro and add specifics in the last paragraph of the intro."

Materials and Methods "There is minimal information in this section. For example, QA/QC for sample processing, statistical analysis, how MDQ/MQL were determined ect."

Materials and Methods, second paragraph, second line, "Why were these three selected? Differences in type of water treatment? Proximity to something?"

Materials and Methods, third paragraph, first line, "Why only PAC? Other treatments have been show to effectively remove PFAS."

Results and Discussion, second line, "traditional (??) PFAS…"

Results and Discussion, second line, "Again what are the similarities and differences between the communities with respect to the subject of the manuscript?"

Page 6, first paragraph, first line, "Did you test A and B to see whether their treatment effected PFAS concentration?"

Page 8, second paragraph, first line, "Describe how this test was done (in M&M Section)."

Figure 3, "What is this? Add relevant information. Number all figures."

Reviewer 5 (JO)

Page 10, last paragraph, first sentence could be deleted to save space.

Acknowledgements needs to be completed (addition of EPA disclaimer).

If you have any questions about these comments please let me know.

Thank you very much,

Andy