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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Occurrence and Spatial Distribution of the Neutral Per-fluoroalkyl Substances, and Cyclic Volatile Methylsiloxanes in Atmosphere of the Tibetan Plateau" *by* Xiaoping Wang et al.

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Dear Respected Professor: We appreciate the reviewers' comments, which surely improve our manuscript. According to reviewer's comments, we revised this manuscript carefully. All responses and answers are listed below. All revisions were marked as the highlighted text in the manuscript.

Q1. Abstract, line 25: silxoanes should be siloxanes. A: This had been changed. Please see line 25 in revision.

Q2. Lines 71-73: FTOHs and FTOs are not congeners, but compound classes. 4.2 FTOH is a substance which belongs to one of these classes. A: This had been changed. Please see line 72 in revision.

Q3. Line 106-107: there are no estimations of risks in this manuscript. The text in the concluding section suggests that the risks of the "emerging pollutants" are higher without doing any calculations. Do you think the comparison to legacy POPs is meanful? A: We changed this sentence to "Combining the results of this study with the published data regarding legacy POPs in the TP, and emerging POPs in other Asian regions, will provide useful insights to understand the exposure risks of legacy and emerging POPs in the Tibetan environment, and gain a comprehensive understanding of the distribution pattern of emerging POPs in Asia." Please see line 104-108.

In conclusion part, we did not compare exposure risk of emerging and legacy POPs and we just highlighted that concentration of neutral PFASs in the air of the TP are in the hundreds of pg/m3, and levels of cVMS are in the ng/m3 range, which are 2–3 times and 1–2 orders of magnitude, respectively, higher than those for legacy chemicals (such as DDT and HCHs, with maximum concentrations in the tens of pg/m3). Due to the high concentration in air, the continueous emission by local habitants and the poor regulatory in neighbor counties, the risk and harm effect of emerging chemicals should be considered in future. From this perspective, the comparison is meanful.

Q4. Materials and methods, lines 130-131. The sampling design seems arbitrary. Could you explain a bit about why you choose these sampling sites? A: The sampling design is not arbitrary. The sampling sites had been used for monitoring the legacy POPs for around 10 years, and all these sites covers a good spatial coverage of the TP, including 5 sites in the monsoon region; 3 sites in north of 35N, as the westerly domain; and 8 sites located in the transition domain, which is under the control of a shifting climate between Indian monsoon and westerly (Wang et al., 2016).

Reference: Wang et al., Spatial distribution of the persistent organic pollutants across

the Tibetan Plateau and its linkage with the climate systems: a 5-year air monitoring study Atmos. Chem. Phys., 2016, 16, 6901–6911

Q5. Line 190–Do you refer to recovery of the internal standard? Please clarify. A: Yes, here we refer to the recovery of the internal standard. We had clarified this in revision. Please see line 193.

Q6. Line197-198: How could the conversion have happened during sampling? A: We deleted this sentence. Sometimes the recovery above 100% may be caused by erros from extraction and measurements.

Q7. Line 253-254: Can this be caused by phasing-out time? Products containing FOSEs and FOSAs were mostly produced by 3M and mostly phased out in 2002. Products releasing 8:2 FTOH were more recently phased out and the US EPA Stewardship Program only concluded in 2015. A: Thank you for this inspiration. We included this explaination in revision. Please see line 256-259.

Q8. Line 356-371: There is no discussion of correlations of 6:2 FTOH with other FTOHs. A: Some discussion regarding correlations of 6:2 FTOH with other FTOHs were included in revision, please see line 272-277.

Q9. Line 353-354: This is not clear to me A: We reorganized this sentence. “Given that the transition zone is located in the hinterland (central part) of Tibet, where both monsoon and westerly winds become week, and the fresh impact of source regions of either India or Europe/central Asia is limited, thus, the aged/old PFASs in the air of central TP is expected and reasonable.” Please see line 360.

Q10. Line 372-380: Are there any correlations between releases of substance and population/wealth where there are a large number of consumer products? A: Sorry, data regarding the amount of consumer products in Tibet and India cannot be gotten from literatures or other documents, we are not able to conduct correlations analysis.

Please also note the supplement to this comment:
https://www.atmos-chem-phys-discuss.net/acp-2018-151/acp-2018-151-AC2-supplement.pdf

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