

## ***Interactive comment on “Particle-size distribution of polybrominated diphenyl ethers (PBDEs) and its implications for health” by Y. Lyu et al.***

**Anonymous Referee #2**

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Overall, this paper reports some useful new data on concentrations of PBDEs in outdoor atmospheric particles. The principal strength of the paper is its provision of data on the particle size distribution of PBDE concentrations. To my knowledge, data on this issue are scarce. A weakness is its focus on the human exposure implications of this. Given the minor role of outdoor air inhalation as a human exposure pathway, I believe the authors should have focused more on the implications of their data for global atmospheric fate and transport. I have a number of other observations.

1. The authors have made an attempt to place outdoor air inhalation exposure in context with other exposure pathways. They do however, fail to identify contact with indoor dust (either through ingestion - e.g. via hand-to-mouth contact - or dermal contact with dust) as being for many individuals and especially young children, the principal

C5360

exposure pathway.

2. The evaluation for the health risk of the exposure assessment should be made against the USEPA's reference doses for PBDEs (e.g. BDE-47, -99, and -100 etc.).

3. The theoretical considerations of gas-particle partitioning are fine, but no measurements were made of PBDEs in the gas phase. The authors use instead previously published data from another site. While the authors attempt to highlight the "match" between the two data sets, the absence of spatially and temporal consistent measurements of gas and particle phase concentrations is a weakness.

4. It appears that no sampling efficiency standards (i.e. those that assess any PBDE losses during sampling), were added to the filters BEFORE sampling and monitored at the end. It is usual to add at least 1 such standard.

5. Internal standards were added post-extraction and clean-up. They should be added BEFORE extraction.

6. The authors do not provide data about their measurements of PBDEs in SRM2585. How did the concentrations they measure compare to the certified/indicative values reported by NIST for this SRM? This is an important measure for the accuracy of the data reported.

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