

***Interactive comment on* “Evaluation of various methods to measure particulate bound mercury and associated artifacts” by S. Wang et al.**

Anonymous Referee #1

Received and published: 20 April 2013

This paper compares various methods that have been applied for measurement of PBM, the potential for GEM uptake by filters, and the potential forms of PBM being collected using a desorption method. Data is collected over different sampling time intervals, and different times of year. The n is small with 18 samples being collected at one location from March to May, and $n=8$ for the other location. In addition, there is no systematic comparison of data and sampling times. For example, at CU samples using the OFF were collected for two days, and at HF 7 days. They do not appear to have any replication with one Moudi instrument, one Tekran Instrument, “A Quartz Filter..” and “A novel particle inlet filter holder.”

The same is true for their thermodesorption experiment data. It appears they only analyzed one filter here for each day.

Interactive
Comment

While their results are somewhat interesting, because of the lack of replication, and limited data I would not recommend this paper for publication.

In addition, I find the whole discussion of artifacts interesting since no particle loading has been done in laboratory experiments and it cannot be certain what any of the methods are measuring.

Technical comments

The figures have misspelled words. The line for equations need to be written as $y = mx + b$. Pg8587 line 17 particle size cut for Tekran needs to be introduced. Pg 8587 sentence that starts line 25 needs a reference. Pg 8588 there was some particle size fraction work done in the southeast that should be referenced by Engle et al. I think it is in Applied Geochemistry. Pg 8592 –The information on temperature partitioning associated with particles is not new and there are papers by J. Schauer's group and one by Amos et al ACP that should be referenced. English throughout the paper should be checked i.e. Line 25 pg 8593 "is" should be "are." Line 8594- I am not really sure what they are talking about in the last line of section 3.2.2. Is the TekSpec Frit in the instrument with the elutriator in line? The comparison with the Feng paper should consider the difference in loading and the matrix of loading. Figure 1 does not seem acceptable for ACP. Figure 2 define high and low. Is the shift observed statistically significant?

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 8585, 2013.

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