Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2020-860-RC1, 2020

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Emissions of intermediate-volatility and semi-volatile organic compounds from domestic fuels used in Delhi, India" *by* Gareth J. Stewart et al.

Anonymous Referee #1

Received and published: 7 September 2020

Stewart et al present an extremely detailed analysis of emissions of lower-volatility vapors (I/SVOCs) and particulate matter from domestic fuel burning. They focused on fuels typically burned in India. One novel aspect of this study is the use of GCxGC to identify hundreds of individual species emitted from each fuel type.

Overall the paper is very well written and easy to follow. The description of the methods, in particular, is very detailed and shows the high level of specificity in the measurements and the extensive QA/QC. The paper is a little bit tough to follow because the section (and sub-section) headers all have the same style and font. This makes it hard to determine the organization of the manuscript (e.g., there are several sub-sections to

the Methods, but the headers are indistinguishable from the following Results section). Consider numbering the sections.

This paper presents a potentially valuable dataset containing measurements of hundreds of species. However, only the emission factors for PAHs are listed in detail in Table 1 of the SI. I think it would be beneficial for the authors to share the full suite of measured compounds, either in the SI or in an online repository, so that data can be used by other researchers in the future.

One potential weakness is that there is only one sample for most of the fuels tested (Table 1). The authors should acknowledge that there can be significant burn-to-burn differences in emissions.

I'm not certain that Table 2 should be in the main text. This table seems to be part of the QA/QC, and it seems to me that it would be better placed in the SI.

Figure 5 is hard to interpret. The symbols are very small (as is the legend), and as the authors note in the text, there are a lot of species shown. Since the text focuses on the PAHs, it might help readability to put this version of the figure in the SI and only show the PAHs (with larger symbols) in the main text.

Figure 7 and line 548-550 suggest that more of the mass could be speciated with new instruments. However Figure 7 focuses on peaks that can be positively matched with something in one of the standards. Is it possible to infer composition based on the mass spectra of the unidentified peaks?

Grammatical comments: Line 152 and 153 - it seems like "samples" in the former line mean the sampled media (filters and SPE), and in the latter it means the fuels. Please clarify.

Line 195 - define EtOAc

Line 347 uses NVOC to indicate "non-volatile", but the paragraph starting at line 389 seems to use NVOC to indicate "nitrogen-containing." Please clarify.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2020-860, 2020.