

Discussion paper

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Interactive comment on “Comparison between five acellular oxidative potential measurement assays performed with detailed chemistry on PM 10 samples from the city of Chamonix (France)” by Aude Calas et al.

Co-Editor Decision: Publish subject to minor revisions (review by editor) (29 Apr 2018) by

Nga Lee Ng

Comments to the Author:

Dear authors,

Thank you for the detailed response to reviewers' comments. I think you have addressed their comments sufficiently. I just have two minor comments. The manuscript will be accepted for publication in ACP once these are addressed.

1. A number of recent studies have indicated that oxidative activities from different PM components are not always additive (e.g., Tuet et al., 2016 AE, Xiong et al., 2017 ES&T, Wang et al., 2017 ACP, Yu et al., 2018 ES&T, Tuet et al., 2018 Sci. Rep., etc). It would be useful to briefly discuss the potential limitations of the linear regression model as well (page 15).

We included this comment in the limitation section as following:

Several limitations can be attributed to this study. Most important, all of these results have been obtained for a specific location and cannot be generalized as chemical composition of PM₁₀ strongly differs from one location to another. PM₁₀ chemistry is different from PM_{2.5} and the associations reported here are only valid for PM₁₀. Some components that might mainly reside in the coarse mode are positive factors in the multiple linear regression models (e.g Ti in OP ESRv). They can display a different final health impact, since a fraction of PM₁₀ does not penetrate all the way to lung. Also, the results of the ESR assay warrant caution due to our back correction of the ESR signal linked to the non-linear response of the assay. Finally, multiple model result for the GSH assay is to be considered with caution since normal distribution was not reached in the first step of the analysis. **Moreover, multiple non-linear regression models should also be investigated since several studies have shown that oxidative potentials from different PM components are not always additive (Tuet et al., 2016; Tuet et al., 2018; Wang et al., 2017; Xiong et al., 2017; Yu et al., 2018).** Finally, these analyses are only relevant for PM₁₀ when some health studies are now taking PM_{2.5} into account. Additional studies addressing comparison of OP results associated with PM₁₀ and PM_{2.5} are needed (Gali et al., 2017; Styszko et al., 2017).

2. Regarding metal-organic binding interactions (page 15, line 15), it would also be appropriate to cite Verma et al., 2012 ES&T and Tuet et al., 2016 AE.

Added accordingly page 15, line 15.

Best,
Sally

Thank you for your useful comments,

On behalf all co-authors, Gaëlle Uzu