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Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Measurement report: Seasonal, distribution and sources of organophosphate esters in $PM_{2.5}$ from an inland urban city in southwest China" *by* Hongling Yin et al.

**Anonymous Referee #1**

Received and published: 3 June 2020

Reviews: The manuscript reported the measurement of OPEs in PM2.5 in Chengdu, China and presented the seasonal and spatial distributions, and the potential sources of the OPEs by using multiple correlation tests. The analysis and reported data were consistent with the conclusions. The measurements and findings are critical to fill in the knowledge gap of OPEs levels in inland cities. However, several issues need to be addressed before acceptance for publication. Besides some typos and wording changes, Figure 2 seems not matching the context since no seasonal variations can be seen. Since different statistical tests were used, e.g. Pearson correlation test, spear-



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man's rank correlation test, and nonparametric test, a clearer statement of conditions (e.g. normality check) to use those tests is needed. Lastly, the references need to be checked carefully since some of them are either not matched or not cited appropriately.

Specific comments on the manuscript

1. Introduction: line 30, the reference "Bacoloni, A. et al. 2008" was wrongly matched, since the referenced study measured water samples instead of air.

2. Introduction: line 32, the reference "Araki et al. 2014" didn't measured organisms, instead, they measured dust.

3. Introduction: line 34, the reference "Matthews, et al., 1990, 1993". Both references are animal studies. Thus, stating "many scholars found that OPEs have negative effects on the human body. . ." is not appropriate.

4. Introduction: line 41, the reference " Covaci et al. 2007" focused on analytical method development instead of measurement reports, not sure if it is a good reference here.

5. Introduction: line 53, change "14335" to "14,335".

6. Materials and Methods: line 72, (Sigma Aldrich, ? location? country?); Be consistent in the text in terms of listing instrument/chemical manufacturing info.

7. Results: line 124, "heavy or light polluted area" may be better.

8. Results: line 126-128, rephrase the sentence to make it more precise.

9. Results: line 136, "And they were lower than".

10. Results: line 138, add a space before (Wang, T. et al.), Double check other places in the text to make the format consistent.

11. Results: section 3.3. "Seasonal and spatial variations of OPEs in PM2.5", starting line 186, there is a mis-match in Fig.2 with the context. Where are the seasonal





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variations presented in Fig.2? Only site variations were presented here.

12. Results: line 227, delete first “the”. “Considering” instead of “Considered”.

13. Results: line 228, 229, lowercase “the third ring road”.

14. Results: line 229, maybe “ the uniform patterns of OPEs levels and distribution across the city is understandable”?

15. Results: line 229, delete “But”.

16. Results: line 232, “shoemaking industrial parks are located in the suburbs”.

17. Results: line 233, “high levels”.

18. Results: line 235, delete “to the individual OPE”.

19. Results: line 257, 258, “ their gas-particle distributions determine their concentrations in PM2.5”.

20. Results: line 266, is it “Fig.4 showed” or “Fig.5 showed”?

21. Results: line 275, delete “so”.

22. Results: line 282, add “The correlations between” before actually listing pairs of OPE monomers.

23. Results: line 284, delete second “was”.

24. Results: section 3.4.3 “Correlation analysis of OPEs and PM2.5 concentrations”, you mentioned Fig. S2, in which you used Pearson correlation tests. Why not spearman’s rank correlation tests as you used in Figure 5?

25. Results: line 291, add “found” after “was”.

26. Results: line 315, “different uses”.

27. Results: line 338,339, add a reference to the statement “Chengdu’s wind has





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always been. . .”.

28. Conclusions and Implications: line 372, “compared to the levels of OPEs in other cities”.

29. Conclusions and Implications, line 390, maybe change “not easy to degrade” to “persistent”? What do you mean by “have a high content”?, change the wording to clarify.

30. Reference: line 486-488, where the reference was cited? Cannot locate it in the text “Tang, R., Keming, M.A., Zhang, Y., Mao, Q.: Health risk assessment of heavy metals of street dust in Beijing, Acta. Scientiae. Circumstantiae., 32, 2006-2015, https://doi.org/10.13671/j.hjkxxb.2012.08.029, 2012.”

31. Reference: what is the novelty in this paper compared with your reference paper in Chinese (Line 512-514) "Yin, H.L., Li, S.P., Ye, Z.X., Yang, Y.C., Liang, J.F., You, J.J.: Pollution Level and Sources of 513 Organic Phosphorus Esters in Airborne PM2.5 in Chengdu City, Environ. Sci. (in chinese), 36, 3566-3572, https://doi.org/10.13227/j.hjkx.2015.10.003, 2015."

32. Reference: line 515-517, reference “Zhang, Q. H., Yang, W. N., Ngo, H. H., Guo, W. S., Jin, P. K., Dzakpasu, M.: Current status of urban wastewater treatment plants in China, Environ. Int., 92-93, 11-22, https://doi.org/10.1016/j.envint.2016.03.024, 2016” might not be a good reference to be used here.

33. Figure 2: where is the seasonal variations? As only site variation is presented here.

34. Figure 4: line 542, be consistent with your notations/subscripts in the manuscript, PM2.5 or PM2.5. Same issue in line 544 etc.

35. Figure 5: Line 544, Should be “Spearman’s rank correlation coefficients”. Double check other places to be consistent.





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36. Table 1: line 549, “orientation” of what? wind direction? If so, may want to use a different term since suburb and downtown probably do not quite fit.

37. In Figure 5 “Spearman’s ranks correlation coefficients between the concentrations of individual OPEs in PM2.5 samples” and Figure S2 “Scatter plot of OPEs and PM2.5”, spearman’s rank tests and Pearson’s correlation coefficients were used. Could you explain more about the selection of two different correlation tests?

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