**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Source apportionment of mercury in dust fallout at urban residential area of Central India" *by* S. Pervez et al.

Anonymous Referee #3

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General comments: The data presented in this manuscript are of great interest; knowing where most of the mercury is emitted in an urban setting will help policy makers to target these sources. Unfortunately, I find the data to be presented extremely poorly; analysis of figures and tables is minimal. The conclusion section is not supported by the Results and discussion section. Moreover, the quality of the English is unacceptable. While some sentences are completely unintelligible (e.g., l. 10, Abstract), many are unclear and should be shortened (e.g., l. 13-17, p. 21921). Prepositions are lacking in almost every sentence. Some phrases left me bewildered as to their meaning.

Specific comments: 1. p. 21917, l. 9. I find the estimate of anthropogenic emissions too high, probably because the references are old. See more recent references by

Pacyna et al. for anthropogenic emissions and Mason et al. for non-anthropogenic emissions. 2. p. 21917, l. 14-16. "annual wet deposition of mercury" and "total annual mercury wet deposition" mean the same thing, so why are the numbers different? 3. Section 2.1. Fig. 1's wind rose shows that winds are predominantly from SW/NE, followed by N. This seems to disagree completely with the wind channels of Fig. 2. Add a discussion of Figs. 1 and 2 to the text: "The wind rose indicates that winds are predominantly from XX, so that the most important sources of mercury can be expected to be XX and XX". When discussing the results, refer to this assumption, and, if the assumption isn't supported by the results, explain why not. 4. Section 2.3. Present your methods in Section 2.3 without referring to figures and tables; only refer to Tables and Figures in Section 3. 5. Section 3.1. This Section consists mainly of a repetition of the values in Table 2, which is unnecessary. I'd like the authors to outline important values and trends in this table, i.e, analyze the data and tell us what's interesting. 6. p. 21924, l. 23. Explain how the contribution effect is assessed from the intercept and slope values. 7. p. 21925, l. 12 and Fig. 4. Either remove all species apart from Hg from the discussion and Fig. 4, or discuss what relevance these additional species have for the present study. 8. p. 21925, l. 19-21. I don't see with the dominance of paved roads. What about S-1? 9. p. 21925, l. 22-25. Expand the discussion of the wind channels. 10. p. 21925, l, 27-28. It seems to me that, compared to values of 2.23 for house-indoors for S-1 and 3.53 for S-3, a value of 2.03 for S-5 is not insignificant as stated in the text. 11. p. 21926, l.1-3. Explain how the 30% and 32% contributions were derived. 12. p. 21926, l. 7-9. This conclusion is interesting, but it was not shown at all clearly. 13. p. 21926, l. 15. This trend should be mentioned in the Introduction, not here. 14. p. 21926, l. 15-24. I would move this block to the Results and discussion section; this is exactly the kind of analysis that's missing in that section. In this section, only give highlights. 15. p. 21927, l. 8-10. Don't mention the role of wind velocity and direction in the Conclusion if they haven't been discussed in the Results and Discussion section. 16. Fig. 1. Add text indicating panel a), b), c). In panel a), the wind frequency scale values are out of order. In panel c),

add an indicator for distance. 17. Fig. 3. Keep the y-axis limits the same in each panel for better comparison. 18. Table 2. Combine the two parts of this table. Add a 1st column to state what the numbers given represent. Remove the parentheses within this table. Define "metric tone" – should be "metric tonne" in terms of kg also. 19. Table 3. Expand the column headers from S-1 etc. to their full names. Explain the meaning of the hyphens for S-2. Expand TSTAT.

Technical corrections: 1. Title. Change "at urban" to "in an urban". 2. Abstract, l. 17. Define "SPECIATE of USEPA". 3. General: the word "mercury" should not be capitalized. 4. p. 21918, l. 19 and elsewhere. "located in global scale of: 21oN latitude and 81oE longitudes" should be: "located at 21oN, 81oE". 5. p. 21921, l. 20. "longitudinal measurements" is unclear. Perhaps you mean "measurements taken over a XX-month period". 6. p. 21923, l. 1. Expand "mt" to "metric tonne". 7. p. 21925, l. 15 and similar occurrences elsewhere. I don't think you mean "three atmospheric levels of defined receptor", which would indicate that you took measurements at three levels, e.g. 2 m, 10m and 20m. I think you mean "three receptor sites".

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