

Interactive comment on “Vehicular fuel composition and atmospheric emissions in South China: Hong Kong, Macau, Guangzhou, and Zhuhai” by W. Y. Tsai et al.

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The authors would like to thank the referee for his/her comments for improvement of this manuscript.

1. "maximum benzene levels for Mainland China unleaded gasoline" is changed to "maximum allowable benzene levels for Mainland China unleaded gasoline".
2. In Section 2.1, paragraph 2, details of fuel sampling methodology are added. Also, emphases are added to clarify that evaporative composition of fuel was measured.
3. The toluene-to-benzene ratios were only compared among the gasoline samples in the four cities studied. It is because such kind of recent data is rare, and the gasoline

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composition had greatly changed in the last several decades, so the authors think it is improper to compare our recent results with those very old data.

4. In the introduction, we have changed the sentence to "Fuel composition significantly affects vehicular performance and the emissions in part because it affects the combustion efficiency and evaporative emissions from the fuel system".

In Section 3.3, "In Hong Kong, pollutants emitted from motor vehicles are often trapped between the very tall buildings along the streets" and Section 3.4, "Ethene and ethyne are typical tracers for combustion...", references from previous studies are added.

In Section 3.4, "These gases are tracers of gasoline evaporation and their enhanced concentrations indicated the importance of running evaporative loss from gasoline-fueled vehicles in the targeted cities." is changed to "From our previous discussion in section 3.2, these gases are tracers of gasoline evaporation and their...".

5. In Section 3.4, standard derivations of ethyne/ethene ratios for Hong Kong, Macau, Zhuhai and Guangzhou are added.

6. The contribution of i-pentane in the evaporative portion of diesel is negligible compared with those from gasoline, except the case in Macau. It is the reason for the authors to neglect the influence of the ratio from diesel vehicles. To clarify this point, we have added a sentence "This ratio is generally very little affected by emissions from diesel and LPG vehicles" in the text. As discussed in the text, the authors agree that the evaporative loss of i-pentane from diesel vehicles may contribute to elevated i-pentane levels in Macau, but due to the limited sampling size, the effect cannot be evaluated in this study. Further work on the diesel emission is suggested to be carried out in Macau. There were only 2 oil companies selling vehicular petrol in South China during our sampling period, so it is not a matter whether the vehicles purchase their fuel in Guangzhou or Zhuhai. The authors agree that weighting the gasoline results by sales is advantageous, but the data of the share of sales from different companies are not available and thus the authors assumed that gasoline sales are equal from the respec-

tive companies. Reference has been added to the claim on less effective maintenance of vehicles in Guangzhou and Zhuhai.

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