

Interactive comment on “Mercury emission from crematories in Japan” by M. Takaoka et al.

Anonymous Referee #2

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Review comments After going through the paper, following are the review comments for “Mercury Emission from Crematory in Japan” by Masekoameng et al. submitted for publication in Atmospheric Chemistry and Physics Journal. In summary, the data presented in the paper is interesting but paper is poorly presented and there are ample of places for improvement. However, based on the importance of Hg emission data from crematory, major revision is suggested before potential publication. Some general comments 1. Manuscript contains sufficient spaces for grammatical corrections. Language and presentations must be improved before potential publication. Several sentences are unclear, confusing and not well presented. It is thus, strongly recommended to improve the presentation. 2. Proper wording must be used. Such as “per one” “per”; “big peak” “higher peak”. It is suggested to write paper in more scientific and technical language. 3. The unit denotation $\mu\text{g}/\text{m}^3 \text{ N}$ presented in the paper is unclear. Please explain it in its first appearance. Is it normal cubic meter? If so, it's better

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to present as $\mu\text{g}/\text{Nm}^3$ rather than $\mu\text{g}/\text{m}^3 \text{ N}$. 4. Uniformity in using chemical name and formulae required, such as SnCl_2 is used first and then stannous chloride. The full names for some chemicals are given but not for others (see last para Page 4). Specific comments Title: “Mercury Emission from Crematory in Japan” be better presented as “Mercury Emission from Crematories in Japan” Abstract: “Considering the behavior of mercury in cremations, the findings confirmed that the mercury in stack gas originated from dental amalgam.” Please make it clear. Introduction Page 2: “According to Ministry of Health, Labor and Welfare (MHLW) in Japan (2008a), 99.9% of dead bodies were cremated in about 1600 facilities in 2007. . .” Please provide the total number of deaths per year, which has more implication for Hg emission from cremation. Introduction Page 2: Correct last sentence on para 2 as: “Emissions from crematories very likely to have a significant impact in Japan too”. Introduction Page 2: In last para of Introduction authors presents the purposes of the research, others are fine but “with the goal of developing mercury removal technology” this does not match with the results and discussion presented in the manuscript. How you justify for this? -Throughout the text “actual measured data” have been used many times, it should be avoided. Page 3: Natural gas and oil were used as auxiliary fuel in four and three of the crematories, respectively. This expression is not clear, needs further clarification. Page 4: “This speciation process is based on the. . .” What you want to present here? Page 5: This is because the O_2 concentration is so high (15.8–20.8%). . . This expression is bit confusing how O_2 concentration is 20.8? in flue gas ??? Page 5: “The mercury concentration in flue gas is influenced by the volume of exhaust gas per one cremation.” Remove “one” from here. Page 6: “Based on actual measurements, because Hg_0 was dominant in flue gas, the Hg_0 vaporized in the main chamber was considered to have not changed to a stable state in the cooling zone as it moved to the stack through APCDs.” I am not convinced with above statement. Authors presented that Hg_0 not changed passing through cooling zone and APCDs? By now, there are sufficient literatures supporting that Hg speciation changes with change in temperature, flue gas composition, APCDs and so on. So how authors can assume that Hg_0 vaporized in the main chamber was

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considered to have not changed to a stable state in the cooling zone as it moved to the stack through APCDs?? Page 8: The following expression is out of the subject matter of this paper. "Here, we assume that the emission quantity obtained in this research is a property of each group and shifted it to the emission quantity of the next age range as 5 years passed." Page 13: Activated carbon and catalysts are not the "Advanced APCD" as presented in Table 1. This is to be corrected. I have one general question follows: Is there some especial reason that in Facility 1 to 5 all the experiments were carried out when crematory was burning female? Page 13: Write full form in Table 1. Is it Electrostatic precipitator? Page 13: In Figure 5, "Emission quantity" to be better presented as "emission concentration".

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 27195, 2009.

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