

# Response to Editor – Corrections

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**Manuscript EGUSPHERE-2024-41**

**Title :** “Global scenarios of anthropogenic mercury emissions”

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Dear Professor Zhang,

I am delighted to hand over the final version of our manuscript for publication.

Thank you for handling the review process so swiftly!

Please find replies and explanations of the final technical corrections below.

Kind regards,

Flora Brocza on behalf of the author team.

## General changes to uploaded manuscript

- Table 3: changed from pdf to word table. The pdf table included slightly outdated numbers for OTHER and COMB\_POWER among others. These were updated to be consistent with all graphs and also with the deposited data.
- Figure 4: the alignment between sub-plots was improved.

## Technical corrections: Response to Reviewer #1

The revisions have improved the manuscript and its presentation.

Overall, I understand the revised justification for including only ambitious climate policy, and this is acceptable for publication. I'm not sure I quite agree with the author's take-away that they are able to robustly test whether "Hg emissions from combustion become relatively less important compared to other emission sources, and dwindle when compared to ASGM emissions" -- as they state in the response to reviewer -- since they don't include high-combustion-intensive scenarios. However, the text in the paper itself is appropriate.

Thank you for this response. It is duly noted that ‘high combustion’ scenarios would be very worthwhile additional scenarios. We hope that we can analyze a wider set of scenarios with region-specific policy relevance and perhaps more targeted policy scenarios in the future!

In a few places, the revisions introduced a few more inaccuracies which are outlined here. These should be fixed before final publication:

**Line 68:** Mercury has been known to be highly toxic to humans since the Minamata Disease tragedy in the 1950s --> this is incorrect, I suggest editing to "methyl mercury", or a rephrase, as Hg has been known to be highly toxic to humans for centuries (see <https://direct.mit.edu/books/oa-monograph/4968/chapter/1901501/Human-Health-Mercury-s-Caduceus> for a historical summary, including references).

**Reply:** Done. Thank you for this comment and also for the very useful reference! I had not read this chapter of the Selin&Selin book yet. I sincerely hope that my new phrasing does not introduce more inaccuracies!

L. 65 ff:

"Mercury has been known to be highly toxic to humans for centuries, but global attention on its health impacts and in particular of methylmercury toxicity has been heightened since the Minamata Disease tragedy in the 1950s (e.g. Selin & Selin, 2020). "

**Line 70:** referring to "global dimensions" of the problem in relation to the Aarhus convention is slightly awkward, as this was officially not accounted for in this regional convention -- potentially "long-range transport" dimensions would be better?

**Reply:** Done. Thank you for this very useful suggestion!

L. 67:

"Increasing awareness of the long-range transport of Hg<sup>0</sup> and the resulting cross-boundary nature of the Hg problem..."

**Line 82:** 147 ratifications is actually incorrect, as some parties have acceded, not ratified. Please change to 147 parties.

**Reply:** Done. Apologies – I have clearly mislabeled the number of (acceded) parties here. I have now referred back to the "Parties and Signatories" page of the Minamata Convention and reviewed the status of different countries. There are only 103 ratifications in the strict sense, so I have followed the terminology on the convention homepage and now refer to '128 signatories', as indicated on the top of the page.

L. 78, 79:

"It entered into force in 2017 (UNEP, 2013) and there are 128 signatories to the Convention as of May 2024."

**Line 91:** the new text now refers to "severely limiting primary mercury mining" which has introduced an error, the Convention actually bans primary mercury mining!

**Reply:** Done. This might have been inference from my mother language, where I read "primary mercury mining and mercury trade" as one phrase. This is now specified:

L. 86, 87:

"..., there are provisions for regulatory action on other domains, such as banning primary mercury mining and severely limiting mercury trade,..."

**Table 1:** Why was gasoline deleted here?

**Reply:** Gasoline was deleted as it is part of the 'Liquid Fuels' aggregation category. Upon revision, it was decided that it would be inconsistent to single out gasoline while aggregating all other liquid fuel categories.