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Dear Gunar Futsaeter and Simon Wilson,

Thank you for the opportunity to comment on the document entitled *The DRAFT summary report of the Technical Background Report on Global Mercury Emissions (Update of the 2008 report: "Global Atmospheric Mercury Assessment: Source, Emissions and Transport")*. The following are comments of on that document provided by Eva Kruemmel of the Inuit Circumpolar Council Canada, on behalf of members of the Zero Mercury Working Group (ZMWG). We note that it is difficult to thoroughly evaluate this summary because it is unclear how previous comments to the underlying document were addressed. However, we offer the following comments and recommendations.

In Chapter 5, we recommend a paragraph explaining the unique situation of the Arctic, where high mercury concentrations are being found in the food web, although the exact processes of how the mercury is getting there are not clear. Mercury depletion events could be mentioned, noting that research on their importance is ongoing. The modeling paper that postulated that a big source of mercury to the Arctic Ocean is coming from Arctic rivers should be included in this summary (it was also missing from the technical reports). While there is some discussion of this in the paragraph starting at line 1032, and it mentions that "*river runoff, coastal erosion, and ocean currents account for about half of mercury inputs*", the study from Fisher et al. 2012 published in *Nature Geoscience*, shows that Arctic rivers are assumed to deliver more than double the amount of mercury to the Arctic Ocean compared to atmospheric deposition. In any case, the Arctic is a very special and crucial place with regards to the cycling of mercury, and this should be reflected in the report.

The following specific edits are recommended for the draft document:

Lines 55 – 59: Please include an introductory sentence; it's not clear why the paragraph opens with NILU.

226: Please explain what cinnabar is.

313: Even if used in construction it can be a source again, but this is not clear from the text as currently written. For example, Cairns et al. (2011) found that GEM levels in downtown Toronto were higher in the outdoor air near building walls (“Source, concentration, and distribution of elemental mercury in the atmosphere in Toronto, Canada” *Environmental Pollution* 159:2003-2008). While they were unable to pinpoint the source (other than attributing it to the buildings), off gassing of mercury from building materials such as cement would be a likely reason.

402: ‘represents’ should be plural (‘represent’).

Page 14: The figure should include a number and caption, as well as a reference within the text explaining it. For example, it should be explained that ASGM is depicted on its own, and why. The small pie charts are difficult to read, and it is not quite clear which sectors are represented on those.

698 – 700: There is a need to note here that the exact opposite is the case for CFLs: while the Hg content may be reduced in the lamps, the use of the number of lamps can be expected to increase exponentially, since the old, non-Hg containing bulbs are being phased out and even banned by many countries. Only a very small percentage of the CFLs are being recycled (in Canada around 5%). In the North or developing countries or regions this percentage is likely zero. This certainly needs to be factored in when emissions from waste are being estimated. Further, a paper by Hagreen and Lorie (2004) concludes that in Canada the release of mercury associated with its use in products is 4.5 times of what previous inventories indicate. They further estimated that “waste-related mercury releases and transfers for disposal and recycling are 11 times greater than that of electricity generation in Canada” (*Canadian mercury inventories: the missing pieces*, *Environmental Research* 95:272–281).

875-877: This should be adjusted to what will be shown in the table and as is noted, the details of the different stations should be shown. It should be noted that in the European Arctic (Ny-Alesund) an increase is observed, whereas Alert shows a slight decrease – it clearly depends on where the stations pick up the signal from. It is important that this is reflected and correctly interpreted in the text.

907: In this section, “Measurements and trends of mercury in precipitation”, please add something about dry deposition, which is mentioned earlier as being more important than wet deposition in some regions. If there are no trends for dry deposition, maybe it should be stated here.

1068: ...80 tonnes of MeHg “reach” (instead of ‘reaches’).

1137: Is the likely reason for the decline the emission reductions in North America and Europe? If so, this would be encouraging in terms of a possible effect of a global mercury agreement on mercury levels in the oceans, and it would be helpful if this could be stated.

1183 – 1184: As noted in 1137, however, declines in the North Atlantic Ocean are now visible. This seems a bit contradictory and bears further clarification. A possibility would be to explain differences when looking at water vs. food webs, etc.

1298-1299: Also, please note that this mercury may be at least partly available to the local aquatic food web, and this would have a local impact.

In closing, we appreciate the opportunity to participate in the development of the global mercury emissions inventory and look forward to continued involvement.

Best regards on behalf of the Zero Mercury Working Group.