

July 29, 2009

**Response to Public Comments Received on Draft Outline and Background Sections of
Great Lakes Mercury Emissions Reduction Strategy**

Prepared By: Great Lakes Mercury Emission Reduction Strategy Technical Team

Comments from Mike Murray, NWF

Comment: For Section 5 (Emission Sources), the section heading seems to duplicate information already presented in Section 3. Would a heading something like “Characterizing and Identifying Programs to Address Priority Emissions Sources” be more appropriate?

Response: We have changed the heading of this section to “Addressing Priority Emissions Sources”

Comment: For Section 8 (Implementation and Tracking Progress), I would invert the order of the two components – i.e., highlight priorities first, and then the process for tracking progress.

Response: [section 8 is just a placeholder]

Comment: For the Appendices, I assume Appendix A would not contain the full GLRC Strategy? Could Appendices A and B be combined and include just the toxic pollutants section of the strategy, highlighting the recommendation related to the mercury phasedown strategy?

Response: [??]

Comment: Are you sure New York has a statewide mercury advisory in place?

Response: There is a statewide advisory in New York that states that the “general health advisory for sportfish is that you eat no more than one meal (one-half pound) per week of fish taken from the state's freshwaters and some marine waters at the mouth of the Hudson River.” The New York State Department of Health issues this advice, in part, because “some chemicals are commonly found in New York State fish (mercury and PCBs for example).” See New York State Department of Health, “Chemicals in Sportfish and Game: 2008-2009 Health Advisories,” p. 2. “<http://www.health.state.ny.us/environmental/outdoors/fish/docs/fish.pdf>”

Comment: A number of review papers/chapters discuss the methylation process in general (i.e., overall, the main factor likely explaining more typical elevated levels in inland vs. Great Lakes waters – one good one is Wiener JG, Krabbenhoft DP, Heinz GH, Scheuhammer AM. 2003. Ecotoxicology of mercury. In: Hoffman DJ, Rattner BA, Burton GA Jr, Cairns J Jr, editors, Handbook of Ecotoxicology, 2nd ed. Boca Raton (FL): CRC Press, P. 409–463.)

Response: We have included a reference to this chapter in a footnote.

Comment: Last sentence. I would change last sentence from: “...particularly in the organic form--methylmercury.” To “...particularly in the organic form of methylmercury.” (given that there is more one organic form of mercury)

Response: Agreed.

Comment: I would change sentence from:

“...trophic structure of the fishery,...” to

“...trophic structure of the food web,...”

Response: Agreed.

Comment: Table AA. The footnote c does not apply to the entire row of Direct anthropogenic emissions, but only the last three figures (2143 lbs) – you could move it over to each of those.

Also, given that it is the first footnote in the table, it should be “a” instead of “c”.

Response: Agreed

Comment: I would change from “The more rapid re-emission of deposited mercury mean that there will be a delay of many years...” to “The relatively rapid re-emission of deposited mercury means that there would be a delay of many years...”

Response: Agreed

Section 3.3.2

Comment: Ultimately, the sources of mercury are either natural or anthropogenic (or re-emissions from one of these activities). So I would change the first sentence from:

“The flux of mercury from the atmosphere to land or water at any one location is comprised of contributions from natural sources, human-caused activities, regional sources, and local sources.” To something like “The flux of mercury from the atmosphere to land or water at any one location is comprised of contributions from both natural sources and human-caused activities, and where sources can be local, regional or global.”

Response: Changed the sentence to read: “The flux of mercury from the atmosphere to land or water at any one location is comprised of contributions from natural and human-caused sources, which can be local, regional or global.”

Comment: Reference should be Keeler et al. 2006.

Response: Agreed.

Section 3.3.3

Comment: Not a big issue, but it would be better to change “mercury emissions” to “mercury species”

Response: Agreed.

Comment: Reference should be Dastoor and Larocque, 2004.

Response: Agreed

Comment: Somewhere in this section it would be good to reference some of the other studies that have come out recently on the significance of local/regional sources to mercury deposition in the region. For example, using a global mercury transport model, Selin and Jacobs (Atmos. Environ., 42:5193-5204, 2008) estimated that as much as 50 percent of mercury deposition in the Midwest was attributable to North American anthropogenic sources. In a paper examining sediment cores in central New York lakes, Bookman et al. (Atmos. Environ. 42:6088-2097, 2008), estimated that local and regional emissions sources likely contributed as much as 80 percent to deposition there.

Response: A brief summary of these studies has been included.

Section 3.3.4

Comment: Somewhere in this discussion on the NEI and emissions in the Great Lakes states, it would be good to mention that uncertainties for some of the sectors could be fairly high (e.g., oil and natural gas combustion), due to limited data on actual emissions and wide-ranging emissions factors. We touch on that issue in our 2004 paper (Murray and Holmes), which is in your reference list but not cited in the text of this section.

Response: Agreed

Comment: Somewhere in this paragraph on the MDEQ inventory it would be helpful to have a brief mention of definition of area sources.

Response: [Joy—can you provide MDEQ’s definition of area sources used in this inventory?]

Section 3.4.1

Comment: It may be worth mentioning in this section the recent settlement decision concerning the legal challenge to the 2006 NESHAP for cement kilns (74 FR 4433), whereby EPA agreed to issue a notice of proposed rulemaking by 2010.

Response: The proposed rulemaking will be discussed.

Comment: Last sentence: Assuming this data came from the Regulatory Impact Analysis of CAMR (e.g., P. 8-14), I believe the last part of the sentence should be changed from “...the mean was 16 ug/m2.” to “...the median was 16 ug/m2.”

Response: Agreed.

Comment: Last sentence: Change from “Figure EG shows the remaining predicted mercury emissions...” to

“Figure EG shows predicted mercury deposition...”

Response: Agreed.

Comment: Figure EH. I would change label from

“CAMR Option 1 Compared with Baseline 2020 Mercury Deposition (Results of a 9 ton Reduction in U.S. Emissions)” to

“CAMR Option 1 Compared with Baseline 2020 Mercury Deposition (Results of an additional 9 ton Reduction in U.S. EGU Emissions) “

Response: Agreed.

Comment: Figure EI. I would change label from

“CAMR Option 2 Compared with Baseline 2020 Mercury Deposition (Results of a 14 ton Reduction in U.S. Emissions)” to

“CAMR Option 2 Compared with Baseline 2020 Mercury Deposition (Results of an additional 14 ton Reduction in U.S. EGU Emissions)

Response: Agreed

Comment: The discussion in section 3.4.3 on elemental vs. reactive gaseous mercury should include consideration of some of the more recent research on both mercury speciation in the atmosphere and the potential for elemental mercury to contribute directly to loading (via gaseous transfer, rather than just from conversion to more readily deposited RGM). Even some recent modeling has not fully considered this issue. For example, Cohen et al. (*Environ. Res.*, 95:247-265, 2004) note that their model for the Great Lakes basically assumed that net dry deposition of elemental mercury was zero. In contrast, measurement and modeling work near a mercury cell chlor-alkali plant indicated that elemental mercury dry deposition can be quite appreciable (see Landis et al., *Atmos. Environ.*, 38:613-622). In their work estimating mercury fluxes into and out of Lake Ontario, Lai et al. (*Atmos. Environ.* 41:8205-8218, 2007) reported that the largest fraction of total deposition to the lake surface was actually attributable to elemental mercury (although the overall net gas exchange was emission of 110 kg/yr). More recently, the review of Lindberg et al. (*Ambio*, 36(1):19-32, 2007) discusses generally the issue of oxidation of elemental mercury and impact on deposition scenarios, and Pirrone et al. (*Atmos. Environ.*, 42:8549-8551, 2008) briefly touch on the issue as well.

Response: These issues are addressed in a footnote.

Comment: The general approach outlined in this section for identifying mercury-emitting sectors to focus on is reasonable. However, I do have two general recommendations. First, keep in mind the discussion above on the issue of elemental mercury, and the potential for increased deposition locally or regionally (either directly, or following conversion to oxidized mercury) – hence, contributing to potential benefits in reduced loadings locally or regionally. (Of course, as noted in the draft report, we should be supporting reductions of emissions even if benefits accrue outside of the region, for several reasons.) Secondly, it is worth keeping some flexibility in choices of sectors, in case new information becomes available (e.g., more direct measurement data on emissions and/or better emission factors) that may indicate a previous marginal source sector may be more significant, and deserve higher priority.

Response: We appreciate the comment, and believe that we have selected source sectors based on the most recent available data.

Comments from Lyman C. Welch, Alliance for the Great Lakes

Comment: We are pleased that the GLRC continues to work on strategies to reduce mercury emissions. It is important for the final strategy to include concrete and specific action steps that will be taken to achieve these reduction goals. In particular, Section 8, “Implementation and Tracking Progress” needs greater detail than now suggested by the outline of the table of contents. To be effective the Strategy should incorporate the following elements:

- The signatories must commit to deliver on all the reduction deliverables;
- A lead agency must be identified to address each action item;
- Action items should be prioritized;
- A public tracking, progress reporting and accountability structure must be created; and
- Aggressive implementation of existing regulatory programs must be incorporated as a method for achieving further reduction.

Response: Each agency will need to formulate its own specific response to the Strategy, including prioritization of actions as appropriate.

Comment: Each of the Great Lakes states, the Great Lakes Indian Fish and Wildlife Commission, the Chippewa Ottawa Resource Authority, the cities within the Great Lakes and St. Lawrence Cities Initiative, the Great Lakes Regional Pollution Prevention Roundtable, and the USEPA’s Regions 2, 3 and 5 and Great Lakes National Program Office should be involved in the development of recommendations and clearly identify which specific recommendations they will proceed to implement. Each signatory should designate an individual who carries ultimate responsibility for implementing these recommendations.

The individual charged with such responsibility or the specific program area within the signatories that has the implementation responsibility should then be charged with developing the Strategy and timetable for full implementation to achieve the stated goals. Progress and decisions to implement (or not) action items should be tracked and provided to the public to ensure adequate incentive to complete tasks.

Response: Mechanisms for tracking of responsibility for implementation of recommendations within individual agencies will be left to those agencies, and will not be specified in the Strategy.

Comment: Prioritization should aim to achieve the greatest reduction possible in mercury to the Great Lakes in the shortest possible time. We are glad that Priority Emission Sources were identified. Since coal-fired power plants contribute the greatest amount of mercury to the Great Lakes, these sources should receive the greatest priority out of all sources identified. Both new and existing sources should be addressed, since construction plans for several new coal-fired power plants are now in the works in the Great Lakes basin.

Response: While coal-fired power plants are the largest source of mercury emissions within the Great Lakes basin, they are not necessarily the largest source in each state. Setting priorities will be the responsibility of individual agencies, with input from the GLRC.

Comment: One apparent omission in the report is that direct discharges of mercury into the water are not fully addressed. While direct discharges to water are smaller than air discharges, the report should discuss these sources and develop a comprehensive approach.

Response: The charge from the Great Lakes Regional Collaboration was to develop a strategy for addressing air emissions. The scope of this report is limited to air emissions.

Comment: The use of mercury permitting strategies and variances has allowed states to delay reductions in mercury releases. The Strategy should mandate improved state implementation of mercury permitting strategies to encourage identification of effective mercury pollution prevention measures.

Response: The Strategy will address air permitting strategies.

Comments by Dale Phenicie, Council of Great Lakes Industries:

The initiative involves a workgroup of Federal and State agency staff members with the expressed objective of “producing institutionalized activities to sustain mercury emissions reductions for unregulated sources, and regulated sources with potential for additional reduction.” The Great Lakes Regional Collaboration (GLRC) Executive Committee has also determined that “[t]he Strategy should produce recommendations for state action, or available options for state action.” In the absence of a regulatory structure to do so, the working group will have to establish recommendations – the equivalent of “guidance” statements - to accomplish these goals. As CGLI has previously pointed out, such “guidance” is subject to the January 18, 2007 U.S. Office of Management and Budget (OMB) directive regarding Agency Good Guidance Practices, OMB Bulletin No. 07-02. Since emissions reduction proposals resulting from the Reduction Strategy initiative are likely to qualify as both “significant guidance” and “economically significant guidance,” the following process requirements would apply.

- A clear justification for establishing the guidance must be provided. This would include a demonstration that mercury sources within the Basin significantly impact basin waters.
- The benefits to be attained from the guidance must be stated. In other words the number of fish consumption advisories that could be lifted as a result of guidance implementation would have to be described.
- Formal ***Federal Register*** notice and comment processes would have to be followed.

Response: The Emissions Reduction Strategy will not be a federal agency document, and therefore does not qualify as federal agency guidance.

Comment: An undated letter received by CGLI on 22 May 2008, signed by Mr. Gary Gulezian, and Mr. Danny Epstein, stated that GLBTS initiatives such as the Mercury Emissions Reduction Strategy were not “significant guidance” because the GLBTS is “...sharing information and ideas that participants may take back to their respective organizations.” CGLI respectfully disagrees. The Reduction Strategy is much more than “ideas.” The stated purpose of the initiative is to examine mercury emissions and reach consensus among the Working Group regarding goals and objectives pertaining to emissions reductions. This constitutes “guidance” to the states for implementation of U.S. Federal policy. OMB Bulletin No. 07-02 defines guidance

document as “an agency statement of general applicability and future effect, other than a regulatory action that sets forth a policy on a statutory regulatory or technical issue or an interpretation of a statutory or regulatory issue.” .

Response: The Emissions Reduction Strategy does not represent “an agency statement.” Rather, if the Great Lakes Regional Collaboration chooses to publish it, it will be a GLRC document. Moreover, while EPA is a participant in the GLRC and in the workgroup that is drafting the Emissions Reduction Strategy, it is not signing the Emissions Reduction Strategy. We hope that the Strategy will, as stated, reflect consensus among workgroup members.

Comment: As a result of the February 8, 2008 U.S. Court of Appeals decision regarding the Clean Air Mercury Rule, mercury emission limitations from coal fired power plants are once again being reviewed by U.S. EPA. It is our understanding that, anticipated new MACT standards are likely to be applied on a unit-by-unit basis. The Great Lakes Mercury Emissions Reductions Strategy should not anticipate or second guess this pending regulatory outcome. Given the court’s action, which occurred after the recommendation included in the Great Lakes Regional Collaboration Strategy said to be the authorization for the initiative was advanced, the development of a Great Lakes Mercury Emissions Reduction Strategy is premature and should be put on hold until the Federal regulatory processes that pertain to these regulated sources is completed.

Response: The draft Strategy does not attempt to anticipate or second guess pending EPA regulatory decisions. It does attempt to evaluate a path forward for states given the current federal regulatory situation.

Comment: When considering total emissions and the extent to which there is a “potential for high deposition within the Great Lakes Basin,” the following factors must be recognized.

- The form that mercury is in when released via emissions is the most critical factor. Mercury must be in an “oxidized” or reactive state to cause impact in the environment. The extent to which mercury emissions contain “oxidized” mercury, or to which released mercury can become “oxidized” must be considered.
- Studies have shown that emissions from several in-basin release points do not have a significant effect on Great Lakes water or biota levels. Chapter V of EPA’s Roadmap for Mercury, published in July 2006¹ explains that 83 percent of mercury deposited in the U.S. originates from international sources. In 2000, only 9 percent of total global mercury emissions originated in North America. The Roadmap also concludes that U.S. domestic sources influence mercury deposition much more in the Eastern U.S. than in other regions. For these reasons (and the speciation issues mentioned above), in-basin controls are not expected to have much – if any – impact on basin environmental mercury levels.
- Evaluation of the ability of in-basin sources to impact Great Lakes waters must be included in any emissions study. Evaluations of emissions sources within the Great Lakes Region

¹ <http://www.epa.gov/mercury/roadmap.htm>

have demonstrated that releases from a large electric utility generating plant and a cement plant do not significantly contribute to in-basin mercury loadings.

Response: We agree that the form of mercury emissions is important, that international sources are very important, and that in many parts of North America, controls on nearby sources will not have a large impact on environmental mercury levels. We also agree that releases from even large individual sources do not usually contribute significantly to in-basin mercury loadings. However, we believe that the evidence reviewed in the draft Strategy shows that within-basin mercury sources collectively do have an appreciable impact on mercury deposition within the Great Lakes basin, and that controls on these in-basin sources can, collectively, reduce contamination levels. Moreover, we believe that it is important to consider the small, but widespread, impact of controls on Great Lakes basin sources on global mercury deposition.

Comment: [Regarding the sector selection criteria of potential emissions growth] Future emissions growth from an existing source would only be an issue if existing sources are currently operating at levels significantly below their permitted operational limits. Under rules now in effect, the following requirements pertain to new emissions sources.

- New equipment at an existing facility and new facilities must meet NSPS standards meaning that they would have to comply with 90 percent mercury emissions reduction standards.
- And, the Clean Air Act requires that any new mercury emission source be evaluated for the potential to impact the environment before an operating permit can be granted.

Response: An economically-growing source sector can have increasing emissions, even if emissions at individual sources within the sector are not increasing. Moreover, some sources are not subject to NSPS. For instance, crematories are expected to be a growing source of mercury emissions, because of anticipated growth in the number of cremations, but crematories are not subject to NSPS.

Comment: [Regarding the sector selection criterion of whether emissions from a sector are already being addressed] These criteria appear misplaced in the Reduction Strategy initiative.

- States always have the ability to legislate environmental standards for a particular sector.
- It is unclear what role this factor has in the Reduction Strategy. If the Strategy is to be used to recommend or urge states to adopt particular emissions requirements, the Strategy would clearly be “significant guidance.”
- Given that U.S. Federal regulatory limits are being reevaluated it is premature to suggest that any state adopt a particular standard. It may end up being inconsistent with final Federal rules.

Response: We agree that states have the ability to legislate environmental standards. The Strategy is not guidance because it is not a federal agency document. We appreciate that in many circumstances where federal standards are under development, it may be preferable for states not to develop standards as well. However, it is not necessarily inconsistent for a state to adopt regulatory requirements that differ from federal requirements.

Comment: [Regarding the criterion of the availability of cost-effective control measures] Notwithstanding the regulatory issues that would have to accompany a requirement for use of

specific control measures (especially in the face of uncertain Federal regulations), any “cost-effective” evaluation must include a cost-benefit analysis. Evaluation of “cost-effective opportunities” must include an assessment of the potential for the resulting reduction to make a significant reduction in number of fish consumption advisories. Emissions reductions, on their own, are not a sufficient end-point, for a “cost-effective” demonstration.

Response: It is beyond the scope of this Strategy to perform cost-benefit analysis for control measures under consideration. Cost-effectiveness is evaluated in relation to other control measures that have found to be of reasonable cost.

Comment: Clearly there are significant questions regarding the justification for moving forward with the Great Lakes Mercury Emissions Reduction Strategy. Primary to these is the unsettled nature of the U.S. Federal mercury emissions standards. Equally as significant, should this initiative, none the less, move forward is the lack of industry input into the Strategy development process. CGLI continues to believe that Basin interests would be better served if the Working Group preparing this initiative included industrial participants. Our industry stakeholder group continues to urge the GLBTS managers to adopt this process.

Response: We do not believe that the unsettled nature of some federal mercury emissions standards is an insurmountable hindrance to the development of the Strategy. We are eager to get industry input on subsequent drafts of the Strategy.
