## Toxic Contaminants Workgroup Comments on Draft Mercury Story Map (June 2019)

Responses to comments are in red.

* *Ian Hartwell, NOAA:* The Y axis if Fig 5 needs units. Addressed, figure corrected
* *Barnett Rattner, USGS*: suggestion to refer to work on Hg in water birds, and reference to Hg database Addressed. References included in methods paper
* *Jillian Adair, EPA Region 3:* Micka forwarded me your e-mail on the Chesapeake Bay mercury story map. I reviewed for MD as the MD TMDL and 303(d) list coordinator. I used MDE’s clickable integrated report to look for eye-catching differences (<https://mdewin64.mde.state.md.us/WSA/IR-TMDL/index.html>).
  + Tab 1 generally looks similar to MDE’s map except for a sliver of the Potomac River between 2 other impaired Potomac segments being listed as meeting criteria by MDE and impaired by the story map. Addressed
  + Tab 2 also generally looks similar, but you can see that MDE denotes the entire TMDL watershed whereas the story map only shows the impaired segments addressed by the TMDL. Either way is fine.
  + Tab 3 generally looks similar with a few small attaining segments missing from the story map. Addressed
  + The waters shown on Tab 4 are on MDE’s TMDL priority list and mercury TMDLs are planned to be completed by 2022.
  + Just an editorial note for Tab 5, I don’t see a table title, axes titles, or axes units. Addressed, figure corrected
  + Also, just an FYI for future reference. EPA is in the midst of transitioning to electronic 303(d) reporting through the new ATTAINS database. After our regional states are transitioned to the new system, we could collect this geospatial information via the ATTAINS database. MD, DE, and DC are fully transitioned. PA is almost transitioned and we’re still working on the transition for VA and WV. So for future integrated reporting data, feel free to reach out to me and I can try and help you find the right info. Addressed. ATTAINs information and contact included in methods for future updates.
* *Micka Peck, EPA Region 3:* Thanks for drafting the story map, it tells an interesting story (for lack of a better word). A few comments:
  + Tab 3: I think ‘delisting’ is a bit jargon-y and recommend considering a new title (maybe “Mercury Impairment Removals.” Also, I recommend the following change to the first sentence “…is removed from the list of impaired waters, or delisted.” Addressed. Language suggestions incorporated into Panel 3.
  + Tab 5: It seems like an introductory statement is missing. I’m seeing a link to the emissions report and then a sentence starting with “However,…” I suggest something along the lines of “Atmospheric mercury concentrations are improving at a national level.” Addressed. Text included, but changed “mercury concentrations” to “mercury emissions” to reflect emissions data displayed.
  + Is there any way that we could put an outline of the airshed on this map? Does it get too busy or confusing to do that?
* *Greg Allen, EPA CBPO:* 
  + Panel 3 Suggest add in blue “… may be resulting in decreased mercury deposition to the landscape and surface waters in the Chesapeake watershed.” Addressed. Suggested language included.
  + Wondering if we know a date range for the Md delistings?   Would help to know if they are recent or older. Maybe we can ask Len.
* *Len Schugam, MDE:* I agree with Jillian that it would be best if we relabeled the tab so it doesn't sound as if a jurisdiction is not planning to develop a TMDL.  We could also have separate tabs for "TMDLs under development" and "TMDLs planned for future development."   I can't recall what was settled on for the PCB story map.  MD is planning to develop a TMDL for all remaining Hg listings however is waiting to see if any impairments will be delisted due to additional fish collections underway.  We already know that Potomac River Washington County (Dam 3-4) has been delisted in the 2018 IR.
  + Also the "Mercury Delistings" tab is a little misleading as many of the waterbodies displayed on the map were never delisted from Category 5.  They were placed in Category 2 to begin with based on their initial assessment.  You could label it something like "Waterbodies currently meeting water quality standards for Hg."
* *Mark Richards, VA DEQ:* Thanks for providing VA the opportunity to comment.  After DEQ's internal review of the maps, the only inconsistency we found was associated with the Shenandoah River in Panel  2 - Mercury TMDLs as of 2017 and Panel 4 - Mercury Impairments without Existing or  Planned TMDLs.  The entire Shenandoah River has a contiguous TMDL that was developed in the 2008-2009 time-frame.  As it exists, the map in Panel 2 shows four breaks moving from upstream (beginning in Waynesboro) to downstream (of course the map in Panel 4 shows the opposite).  These should be filled in (or removed on map 4) as a Hg TMDL exists in these sections.  The downstream extent shown in your map(s) is accurate (i.e, confluence with Craig Run).  Addressed. Map layers have been updated for the Shenandoah River segments.
  + It is suspected that any confusion may have come about based on existing impairments in these waters for something other than Hg in fish tissue (i.e., either bacteria for recreational use or benthic impairments for aquatic life).
  + We don't have any comments on Panel 5.
* *Mark Cohen, NOAA:* I took a look at the Story Map, and I think the emissions page seems fine. There are a number of ways that the story could be told, and what you have seems to be as good as any. A couple of comments to consider, that might help with clarity? (But ok to leave as is).
  + (1) Make clear that these are just U.S. emissions.
  + (2) The NEI includes all anthropogenic emissions in the U.S. (and I think does a decent job of this). Addressed. Introductory sentence now reads “Atmospheric mercury emissions from anthropogenic sources are improving in the United States ([2014 National Emissions Inventory Report](https://www.epa.gov/sites/production/files/2018-07/documents/nei2014v2_tsd_05jul2018.pdf)).”
  + (3) Mercury discharged from point and area sources directly into the watershed (e.g., from chloralkali plants) have decreased substantially, and it is believed that the largest source of mercury to the Ches Bay Watershed is via atmospheric emissions of mercury and subsequent deposition. Addressed points 3-6 partially. Decision to omit discussion of global trends and keep focus national and regional. New text reads “Mercury discharged from point sources and areas directly into the Chesapeake Bay watershed has decreased substantially. The largest sources of mercury today to the Chesapeake Bay watershed are thought to be atmospheric emissions of mercury and subsequent deposition. However, long-term monitoring and analysis are needed to quantify relationships between emissions, deposition, and bioaccumulation of methylmercury in fish.”
  + (4) A big part of the reduction in emissions over the years has occurred in regions within and/or upwind of the Ches Bay Watershed.
  + (5) There is a complex and not completely understood relationship between emissions and mercury deposition, as deposited mercury can come from nearby emissions or distant emissions, and everywhere in between. All things being equal, mercury emissions nearby have a greater impact, but emissions further away can also have an impact. Mercury deposition throughout the Ches Bay Watershed is not constant, but depends on the proximity of sources, weather patterns, and atmospheric chemistry.
  + (6) There is a complex and not completely understood relationship between mercury deposition and mercury in fish, including for example, time lags between changes in deposition to the watershed and reductions in fish mercury.
  + (7) To this point, emissions globally have not decreased, and the relative contribution of local, regional, and global sources may be changing. That is, reductions in deposition due to reductions in regional emissions may be being counterbalanced to a certain extent by increase in global emissions.
  + I understand that it's hard to be really "clear" when the science is so complex and poorly understood. What you have now is reasonable, and can be left alone, if you want, without trying to add in any of the other points above (especially 3-7, which can be hard to explain). These points are partially incorporated into high-level discussion in panel 5. More details contained in this comment will be included in summary paper.