Comments submitted by the Chesapeake Bay Foundation

There is some good work on PBDEs in Back River and Baltimore Harbor that is not mentioned in this report – which I found surprising because I thought it was fairly comprehensive review of the issues and the data and overall that the authors did a great job.

Anyway, I have a "grey literature" report that describes the studies (it was in a report from UMD to MDE), but I think some of it may be published and so have reached out to a friend/colleague Susan Klosterhaus, to see if she can pass along any relevant papers. If not, I think the info in the report is worth including – as I think there is other "non-peer-reviewed" info included.

Follow up: As promised, here is some info on PBDEs in Baltimore Harbor/Back River. I've included what Susan has published to date (see her email below) as well as her dissertation. I think it represents an important addition to the Toxics review so I know it'll take some effort, but I am hopeful the authors will find a way to include.

1. BIOAVAILABILITY OF DECABROMODIPHENYL ETHER TO THE MARINE POLYCHAETE NEREIS VIRENS
2. BIOACCUMULATION KINETICS OF POLYBROMINATED DIPHENYL ETHERS FROM ESTUARINE SEDIMENTS TO THE MARINE POLYCHAETE, NEREIS VIRENS
3. THE BIOAVAILABILITY OF BROMINATED DIPHENYL ETHERS FROM URBAN ESTUARINE SEDIMENTS TO DEPOSIT-FEEDING INVERTEBRATES

Comments submitted by Virginia

Thanks for the opportunity to comment on the report. I have attached a copy with a few edits that touch on the policy aspects of the report. Please look at page 2 of the report (Executive Summary) for the gist of my "policy" comments. In short, I think it is premature to presume that the partnership will adopt new strategies and goals. I think the proper path is for the partnership to consider to findings of the report and then determine whether to establish new goals and commitments based on activity related to implementation of current local TMDLs, available state and federal resources and other factors.

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Proposed Revisions:

Page 2

Need for and Purpose of the Report

Toxic contaminants have adverse effects on fish and wildlife in portions of the Chesapeake Bay and its watershed. The Chesapeake Bay Program (CBP), a federal-jurisdictional partnership, recognized the issue and developed the Toxics 2000 Strategy. Since 2000, new concerns, such as intersex conditions in fish, have arisen. In 2010, the President's Chesapeake Bay Executive Order (EO 13508) Strategy directed Federal agencies to prepare a report summarizing information on the extent and severity of toxic contamination in the Bay and its watershed. The report relied on available information from State integrated water-quality assessment reports (which listed impairments to aquatic life due to toxic contaminants), reports of Federal and State-supported studies, and results of investigations in scientific journals to assess the state of the knowledge about toxic contaminants. Findings from this report may be used by the CBP partnership to consider new goals for reducing toxic contaminants. This report also identifies future research and monitoring activities needed to improve the understanding of the occurrence and effects of toxic contaminants in the Chesapeake Bay and its watershed.

Page 8

Considerations for Developing Reduction Strategies

The findings in this report may be used by the CBP partnership to consider new goals for reducing concentrations of toxic.

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Additional comments submitted:

As I see it, there are two major omissions of work that has been done in Virginia. From 2000 through 2003 Mark Richards and Mory Roberts (VIMS) carried out a series of ambient toxicity studies in the tidal James, from Jamestown Island to Richmond, in Mobjack Bay and the York River (See below). One of the earliest was funded by the Chesapeake Bay Program. Later studies were carried out with DEQ general funds. None of these were summarized or cited in the draft report. Also, I have been carrying out weight of evidence assessments using sediment quality triad results from our Estuarine Probabilistic Monitoring (ProbMon) Program since 2001. About 70% of those assessments (345 sites) were from Chesapeake Bay tributary and mainstem waters. The results from those assessments have been included in DEQ's 305(b) Reports, but there was never any consolidated summary produced evaluating the overall results. I have

begun summarizing the last twelve years of data to write a chapter for the 2014 Integrated Report, but am not far enough along yet to provide an integrated summary.

1. Roberts, M.H., Jr., M.A. Richards, and P.F. De Lisle. 2003. Chemical and Toxicological Characterization of Lower Mobjack Bay, York River, Virginia Segment of the Chesapeake Bay. Draft Final to VA Department of Environmental Quality. 47 pp.

2. Roberts, M.H., M.A. Richards, D.H. Smith. 2000. Chemical and Toxicological Characterization of Tidal Freshwater Areas of Virginia. Work Plan submitted to the EPA Chesapeake Bay Program.

3. Roberts, MH Jr., MA Vogelbein, MA Richards, L Seivard, and PF De Lisle. 2002a. Chemical and Toxicological Characterization of Tidal Freshwater Areas in the James River, Virginia. Draft Final report to EPA Chesapeake Bay Program, 123 pp + Appendices. (CBP/TRS--- 264/02 EPA 903-R-02-006 July 2002) http://nepis.epa.gov/Exe/ZyNET.exe/P1003S1K.txt?ZyActionD=ZyDocument&Client=EPA&Index=2000%20Thru%202005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C00THRU05%5CTXT%5C00000019%5CP1003S1K.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=2

4. Roberts, MH Jr., MA Vogelbein, MA Richards, L Seivard, and PF De Lisle. 2002b. Chemical and Toxicological Characterization of Tidal Freshwater Areas in the James River Between Jordan Point and Richmond, Virginia. Final report to Virginia Department of Environmental Quality, 48 pp + Appendices.

Comments submitted by Delaware

The report is improved compared to the earlier version. However, there are still several shortcomings as listed below.

1. The report fails to state the timeframe of data considered for the report. Along these same lines, there is no mention of long-term trends as demonstrated by fish tissue monitoring data, or as inferred from dated sediment cores. I consider this to be a serious flaw, especially as it relates to legacy PBTs like PCBs and OC pesticides. As noted in my comments on the earlier version of the report, having information regarding trends is extremely important in formulating management actions. I believe there are readily available and existing data that would allow an assessment of trends for certain key contaminants of concern.
2. The report continues to rely upon ERLs, ERMs and similar empirical sediment benchmarks to draw conclusions regarding toxic impacts to benthic aquatic life. At a minimum, the report needs to state clearly that these benchmarks are not cause-and-effect thresholds; that they do not account for site-specific bioavailability; that they carry significant uncertainty; and that they are therefore most suitable as screening values. It appears the authors of the report have ascribed way more stock in the benchmarks than justified by their scientific foundation. The approach taken is inconsistent with EPA's own guidance on assessing contaminants in sediments.
3. My general concern noted in comment 2 is highlighted on page 53 of the revised report where it is stated, "Total PAH levels were also high at some stations in the upper sections of the Nanticoke and Pocomoc Rivers." The use of the word "high" appears to be based on conclusions drawn in Fulton et al. (2007), who compared total PAH concentrations to the ERL for total PAH. I disagree with the conclusion for the reasons stated above. Further, a criterion for Total PAH is meaningless since it ignores the fact that PAHs are complex mixtures with variable hydrophobilicity and variable toxicity. The differential toxicity of these compounds was accounted for in the more sophisticated EqP and narcosis calculations I shared with you during my previous comments. In those calculations, I used the most contaminated Nanticoke sediment sample reported by Fulton et al. (2007) and concluded that the concentrations of PAHs in the sediments are not high enough to cause chronic toxicity to benthic organisms in the Nanticoke. The approach I took to evaluate the data are consistent with EPA guidance for PAH mixtures, while the approach taken in Fulton et al. (2007) and the revised Chesapeake report is not.
4. On a final note, I was disappointed that you weren't able to make use of the extensive information I provided to you as part of my comments on the previous version of the report.

Comments submitted by New York

We generally agree with PA's comments, that this should be an individual state responsibility and should not be a focus of CBP.

Page 30 says: "With the exception of New York, all of the Bay jurisdictions have multiple water bodies listed with fish consumption advisories due to PCB fish tissue concentrations in excess of a state standard or health department threshold. Most limit exposure in terms of meals per week or month and there is variation in the formulas used to calculate the restrictions." Page 141 says: "The State of New York notes impairment in the lower Susquehanna River. The State advises that up to one meal of walleye longer than 22 inches from the Susquehanna River may be consumed by the general population as a result of mercury contamination."

These quotations do not properly reflect New York's health advisories. New York has a general advisory covering all fish in all water bodies that advises limiting consumption. Widespread findings of PCBs and mercury in fish are among the reasons for this advisory. The Susquehanna River advisory for walleye over 22 inches is mis-interpreted. The advisory to eat up to one meal per month is for men over age 15 and women over age 50. Women and children are advised to eat none. Furthermore, the statewide advice to eat up to four one-half pound meals per month applies to all other fish from the Susquehanna.

Please see http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/ for New York State's full advisory. If you have questions about the advisory, you can contact Tony Forti of the Department of Health at ajf01@health.state.ny.us.

There are two omissions in the report concerning contaminants within New York State's waters. Koppers Pond in the Chemung river basin is listed on the 303(d) list due to PCB contamination. The Chenango River (portion 1) is impaired due to mercury. This portion of the Chenango River does not appear on the 303(d) list as it is covered under a completed and approved TMDL. More details and references for these impairments are listed below.

PCBs
Kopper Pond in the Chemung River basin is impaired for fish consumption due to PCBs. A NYS Department of Health health advisory recommends eating no more than one meal per month of carp for men over 15 and women over 50. Industrial wastewater has impacted the sediments at the site. Further study is needed to determine the full extent of the contamination.
(http://www.dec.ny.gov/docs/water_pdf/pwlchmgchco.pdf)

Metals: mercury
In addition to the lower Susquehanna River, the Chenango River, a tributary to the Susquehanna, is also impaired for fish consumption due to mercury. The same restrictions on consumption apply as for the Susquehanna River. Both the Susquehanna and the Chenango Rivers are covered under the Northeast Regional Mercury TMDL, approved by the EPA in 2007.
(http://www.dec.ny.gov/docs/water_pdf/pwlsusqchng.pdf)

Comments submitted by West Virginia

On Page 141 (the mercury section) of your document it states:

"There is an avoidance recommendation for carp in the Shenandoah River, and a limit of one meal per month for smallmouth bass longer than 12 inches as a result of mercury contamination."

This is incorrect, the avoidance recommendation for carp is based on PCBs. Mercury is an underlying contaminant, but an advisory based on mercury alone would be less stringent.

This takes us back to the PCB discussion on page 31. If you look at the WV tissue data alone, it appears that we don't need an avoidance advisory for PCBs. WV has only one carp sample (1 meal/per month advice). However, the weight of evidence provided by Virginia suggested that it would be prudent for WV consider the Virginia data in issuing advisories. (Fish don't recognize state boundaries!) I don't feel that this revelation changes your PCB discussion, but I wanted to clarify our advisory standpoint.