## Minutes from Chesapeake Bay Program Workshop for Toxic Contaminants

## Held on October 20, 2011, USGS Maryland Water Science Center.

*The materials include* ***A.*** *notes and outcomes from each session of the workshop (pgs. 1-9),* ***B****. discussion paper from the meeting (pgs. 9-12)* ***C.*** *list of invited participants and attendees (pgs 13-15)*

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1. Notes and outcomes from workshop sessions

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| **Agenda Item** **and Desired Outcome** | Time | Minutes and Outcomes from Each Session |
| **Introductions and Opening Remarks** | 10:00 – 10:15 | Jim Edward welcomed approximately 30 attendees! See attached attendance list. |
| 1. **Review objectives for workshop and drivers for developing new goals for toxic contaminants.** | 10:15 – 10:30 | Greg Allen and Scott Phillips reviewed the attached discussion paper and the overall format of the agenda. |
| 1. **Ideas for approach to defining the extent and seriousness of the impact of toxic contaminants**  * Scope and process for characterizing tidal and non-tidal portions of the watershed * Comparing monitoring to existing benchmarks and addressing contaminants without benchmarks * Potential for using the state 303d listing process as a cornerstone for assessing extent * Approach for assessing condition of fish and wildlife | 10:30 – 12:00 | **Greg Allen –overview of previous studies**  Toxics Characterization for Chesapeake Bay based on toxic triad (1999)   * Sampling and analysis to fill gaps occurred up to 2004 * Process to update characterization was moving as of 2008 * About 50 percent completed - new decision rules and tributary-specific data files.   CBP using two indicators related to toxic contaminants:   * Toxic contaminant indicator for the Bay and tidal waters. Based on state information to see if there is full or partial impairment in the 92 segments of the Bay. 72% of the segments indicated with some level of impairment. PCBs implicated in most listing. Much of the mid and upper portion of the mainstem of the Bay did not have impairments. * Stream health indicator. Based on index of benthic communities. Will be difficult to distinguish impairments due to toxic contaminants.   Other relavent summary reports available include:   * NOAA summary reports (sediment toxicity report by Ian Hartwell) * USGS summary reports * Journals * Potential next step - summarize existing materials.   **Diana Eignor-EPA—Comparing to benchmarks**  EPA often does not have monitoring data so they look over existing information. EPA recommends using the maximum and minimum concentration and compare to criteria.   * EPA also has WWW site for existing criteria. * USGS Circular 1921 has overview of pesticide monitoring data compared to benchmarks * New benchmarks developed from Gulf Oil Spill (nickel, vanadium, PAHs)   If no benchmarks,   * EPA takes as approach to do a quick screen that is similar to OW process. Do a literature search through ECOTOX, Google Scholar. * Check for effects endpoints and compare to monitoring maximums. * Flag chemicals for further evaluation   EPA has an occurrence database of pharmaceuticals and personal-care products.   * EPA does little monitoring so this database relies on USGS and others who collect the information.   **State speakers covering 303d listing methods and potential for using to assess extent of toxic contaminants; other states asked to make comments on how their state procedures differ.**  **Tim Fox and Len Schugam (Md.)**   * Water-quality standards consist of three separate components: * Designated uses, criteria, and antidegradation policies * For toxic contaminants this includes water column, sediment, and fish tissue. * Considered impaired if over a 3-year period, that 10 percent of samples have exceeded a numeric criteria. * If a water body exhibits toxicity but not exceed standards, do an in-dept toxicity assessment. * Integrated reports, latest report for MD was 2010. * Have several categories to assess quality of waters based on water, sediment, and fish tissue. * List by watershed   Sediment   * Weight of evidence approach and sediment triad * Look at ambient sediment bioassay data, insitu-biological variables (such as B-IBI), and ambient sediment chemistry.   Fish Tissue   * Is not meeting use if fish is considered unsafe to consume * Hg and PCBs are primary causes for impairments.   Have information in both the estuary and streams. Preparing TMDLs for selected areas.  **Don Smith-VA DEQ**   * Monitor for similar contaminants as MD * Also have Chesapeake Bay benthic monitoring program (developed by ODU) * Looking at metals in the water column (and sediment) in both freshwater and estuarine probabilistic monitoring programs * Generally don't look at the water column metals within normal ambient monitoring program (watershed and trend stations) * About five years ago, used semi-permeable membrane devises (SPMD – passive samplers) to evaluate hydrophobic organics in the water column at freshwater Probabilistic sites (about 50-60 sites). * Dr. Dan Dauer at ODU had developed "Benthic Diagnostic Tool", which consists of a discriminant function that calculates posterior probabilities of benthic impairments being "contaminant related" or "other cause" based on metrics associated with the Chesapeake Bay Program's benthic IBI. VA uses it to tentatively identify causes of benthic impairment within the estuarine waters of the Bay watershed. * Not sure how much DEQ could contribute to a summary report. * There will be an update of all 305b integrated assessments in 2012. Drafts for 2012 would be spring 2012 so maybe useful for Chesapeake summary report.   **DE - Dave Wolanski -** Freshwater streams mostly listed based on fish tissue data. Most listing from PCBs and Hg. These impairments are expected to last decades because of the slow breakdown of the chemicals. Some of listing based on metals.    **PA - Gary Walters , Tom Barron -** All toxic contaminants listing related to fish tissue - Hg, PCBs and some listing for chlordane Have a probabilistic sampling program to cover the state about every 5 years.  **DC - George Onyullo -** Similar methods  **WVA- Dave Montali**   * All states required to do state and will have draft 303d list for 2012 time cycle. Once listed they remain on the list. Suggest we look at 2010 or 2012 303d integrated reports for our Chesapeake summary report. * WVA looks at streams and have one stream listed due to PCBs. * See using “traditional approach” for 303d listing. If most of the impairments result from legacy contaminants will be difficult to reduce concentrations and make improvements. * Will be more difficult to address emerging contaminants * Should focus on treatment techniques to remove/prevent contaminants before they are discharged into the water. * Need to consider designed use as we consider contaminants—human health impacts vs. ecological impacts. |
| **Lunch** | 12:00 – 12:45 |  |
| 1. **Continued - Ideas for approach to defining the extent and seriousness of the impact of toxic contaminants** | 12:45 – 1:00  1:00 – 1:15  1:15 – 1:45 | Barnett Rattner: approach for assessing condition of fish and wildlife  **Barnett Rattner-**   * Nice overview diagram of relation between looking at low ecosystem relevance and high ecological relevance. * Contaminant Exposure and Effects Terrestrial Vertebrates database * Pulled out all information from Chesapeake Bay (2006) and published in 2007. Major conclusions included:   + Waterbirds adversely affected by legacy organochlorine pesticides and PCBs in some areas (mostly areas of concern).   + Many metals evaluated in bird eggs but not at thresholds of ecological concern   + Could update this summary for new report. * Conducted sampling for emerging contaminants in ospreys, repeated sampling in 2011.   + Eggs and blood being analyzed; may have some data back on this effort by spring of 2012.   + Black ducks do not next in the Bay (in Canada) so need a good species for contaminant monitoring * How to assess the extent and seriousness of the issue?   + Many of these ideas will not be available for report   + Need for an ongoing monitoring program and look at trends (see his slides) * Research needs (see list)   Vicki Blazer: overview of biological effects related to toxic chemicals and what needs to be done to better assess them  **Vicki Blazer –Biological Effects Monitoring**   * Doing both fish health and water sampling. * Necessary for understanding effects of toxic chemicals * Look at exposures of early life stages * Move beyond existing benchmarks * Need to address emerging contaminants –many lack classic dose-response concentration. * Indicators of reproductive endocrine-disruption –use two indicators to say if it exists. * Looked at estrogenicity * Saw correlation between atrazine and intersex. * How do we consider impacts of bacteria and parasites as part of our report? * Atrazine benchmarks may be too high based on newer information being generated by USGS Columbia lab * Tissue comparison shows lowest levels in muscle but very high in ovary and brain. Human health criteria based on tissue - not other organs. * Tumors are also present on fish in the Chesapeake. * Seeing intersex prevalence with ag lands and see severity correlated to both WWTP and ag lands. * Phytoestrogens as a concern and relation to agricultural and also relation to high herbicide use   **Fred Pinkney (USFWS)** research on skin tumors on fish in the Bay (both liver and skin tumors). How can this be used?  **Discussion of approach for 11/2012 Report (all)**   * The scope of the November 2012 report should cover the Bay and watershed but amount of detail that can be addressed needs to be refined. Additionally, there will be an ongoing challenge how to summarize localized impairments in the watershed (e.g., acid mine drainage) that may not impact tidal bay impairments. Finally, there are major differences between sources and transport in watershed vs. estuary so may need to be addressed differently. * State integrated assessment reports (biannual 303d/305b reports) will be an important source of information about the status of toxic contaminants in the Bay and its watershed. We should use the findings from the 2010 reports for our initial summary of existing conditions in the Bay and its watershed. These can be updated when 2012 draft results are available from states (Spring 2012). * The States will be very busy until April 2012 preparing updated integrated assessment reports so their participation in developing the Chesapeake summary report will be restricted for the next 6 months. However, we cannot depend on the 303d list info alone for our summary since it only focused on compounds with standards and there are additional compounds and effects that must be addressed. * We also need to decide how to convey local TMDL that are occurring in the watershed related to toxic contaminants. The EPA Database of approved TMDLs could identify all that are underway in the watershed. * We discussed how to assess existing information including doing a data call vs. summarize existing reports for contaminants with existing benchmarks. Most felt we could not do a data call for a new unique analysis but rather that the report should first summarize existing State 303 information and then address other contaminants without existing standards. Summarizing occurrence of “contaminants of emerging concern and their impacts would be based on existing studies that are occurring in the Bay and watershed. The existing studies would provide information of impacts of toxic contaminants on fish (intersex conditions in the watershed and tumors on fish in tidal waters), fish health advisories, impacts on wildlife, and occurrence of emerging contaminants. * We need to define which contaminants are being considered for report including contaminants of emerging concern (use EPA’s definition of this. Mostly fed, academic, with some state studies have been conducted for emerging contaminants. * Do we assess loading/application of toxic contamination as part of report? This is probably not a loadings issue unless we use it as a proxy for monitoring data. * Need to define terms to be used in report and be careful with terms such as legacy contaminants, which can be misleading with respect to sources. * We need to decide how the previous Chesapeake ‘toxics of concern’/regions of concern (i.e., urban areas) is part of report and explain how these toxic contaminants differ from nutrients and sediment concerns |
| 1. **Potential major elements of the Nov. 2012 report**  * Extent and seriousness * Progress of management actions (pursuant to Toxics 2000) * Identifying highest priority contaminant risks that should be proposed for reduction goals * Recommendations on a process for developing goals | 1:45 – 2:15 | Based on the discussion of the previous session the major summary items of the report may include:   * Extent and seriousness of toxic contaminants with existing standards in the Bay and its watershed (based on State integrated assessment reports) * Occurrence of additional contaminants of emerging concern and their impacts—sections on 1. Chemicals that have been detected, 2. Impacts on fish, 3. Impacts on wildlife, and 4. Fish consumption advisors. * Options for the type of report include a CBP technical summary, EPA report or USGS report, or other? This needs to be determined. * We should consider having a section on we don’t know or discussing new research needs. * We should consider having recommendations for development of criteria and state standards * The report should lay out next steps/recommendations for developing goals and strategies to reduce toxic contaminants * Need to determine how the report would be used to help assess progress since the CBP 2000 Toxic reduction strategy * Should we include information on the Toxic Release Inventory (TRI) since monitoring data are limited. Are there other data inventories we should include such as - air Hg? * We need to interaction with STAC and others for ‘key’ reports that should be summarized for our effort. |
| 1. **Determine partner roles in preparing summary report.**  * Overview of Key milestones, and due dates | 2:15 – 2:45 | * Scott/Greg will propose an Action Team under STAR to prepare the report with one year duration. [The action team was approved by STAR on Oct 27 and is being set up.] * Greg and Scott will present options for STAC role at their Dec meeting.   - First draft of initial findings—offer comments on this  - Official peer review in August of 2012  - STAC workshop  -provide key reports to be used   * Greg and Scott will summarize options and potential sources of funding to provide support to prepare the report and discuss with EPA and USGS. |
| **Plan Next Meeting and Adjourn** | 2:45 – 3:00 | Next meeting TBD pending Action Team proposal |

1. **Chesapeake Toxic Contaminants Workshop Discussion Paper**

October 20, 2011 meeting, Baltimore, MD **Session 1 of workshop—Need and objectives**

Need for new assessment, goals and strategies for toxic contaminants:

* Required under Chesapeake Bay Executive Order (EO) Strategy: “EPA, DOI, and NOAA will work with state and local governments and stakeholders to expand understanding of the extent and seriousness of toxic contaminant problem in the Bay and its watershed and to develop contaminant reduction goals by 2013”
* Chesapeake Bay Program (CBP) partners had agreed to reduce impacts of toxic contaminants as part of Toxics Reduction Strategy (signed in 2001)
* New problems are affecting the Bay and its watershed including “intersex” conditions in fish.

Objectives of workshop:

* Discuss approaches to define extent and seriousness of the impact of toxic contaminants in the Chesapeake Bay and its watershed.
* Discuss major elements for a summary report on toxic contaminants and potential contributions by federal, state, and other CBP partners.

**Session 2 of workshop: Ideas for approaches to define extent and seriousness of the impact of toxic contaminants.** Speakers will have 15 minutes to provide a brief overview of their perspectives on:

* Seriousness of toxic contaminants in the Bay and its watershed.
* Best approaches to assess the extent and seriousness of toxic contaminants based on existing information (see questions below)

Speakers will provide suggestions to address these questions and there will also be a group discussion at the end of this session:

* What are the best approaches for characterizing the extent and seriousness of the impact of toxic contaminants in both the tidal and non-tidal portions of the watershed?
* How do we best present monitoring information that can be compared to existing benchmarks and also assess data which do not have benchmarks?
* What is the potential for using the state 303d listing process as a cornerstone for assessing the extent of toxic contamination?
* What are the best approaches for summarizing the impact of toxic contaminants on the condition of fish and wildlife?

**Session 3 of workshop: Potential major elements of the summary report (due Nov, 2012).** The potential major elements for the report could include:

1. Executive Summary
2. Introduction
3. Extent and seriousness of toxic contaminants in the Chesapeake Bay estuary

* Water quality
* Sediment quality
* Fish Tissue
* Wildlife

1. Extent and seriousness of toxic contaminants in the Chesapeake Bay watershed

* Water quality
* Sediment quality
* Fish
* Wildlife

1. Progress toward Chesapeake 2000 Toxic Reduction Strategy
2. Summary of extent and seriousness of toxic contaminants
3. Implications for developing goals and strategies for reducing toxic contaminants

Questions for discussion:

* How can we best summarize information from state 305b reports?
* What are some other key summary reports we should review?
* What type of report should be? Options include: CBP technical report, EPA or USGS report, or other?

**Session 4: Determine partner roles and contribution in preparing summary report**

Tentative Target Dates for Report Preparation:

* First draft of initial findings-March/April, 2012
* Provide briefing of preliminary findings to Water-Quality Goal Team (April, 2012),
* Provide briefings to Management Board and Principle staff Committee (PSC) (May-June, 2012)
* Prepare a summary of preliminary findings for Executive Council meeting and potential next steps on developing goals and strategies (June, 2012)
* Finalize text of report-July, 2012
* Technical Review-August, 2012
* Revise-September, 2012
* Finalize-October, 2012
* Release-Nov, 2012

Questions for discussion

* Who are the partners that can commit to writing different chapters of the report by the timeframes listed?
* Who can serve as the overall editor(s) to compile the chapters into one report?
* What type of technical review should be conducted (this will also depend on the type of report we choose to have)?
* How should CBP Scientific and Technical Advisory Committee (STAC) best support the issue? Options include STAC review the report, workshop, or some type advisory role.

**Supporting information: Selected Text from the Chesapeake EO Strategy for Toxic Contaminants (pgs. 37-38)**

**EPA, DOI and NOAA will work with state and local governments and stakeholders to expand understanding of the extent and seriousness of the toxic contaminant problem in the Bay and its watershed and to develop contaminant reduction goals by 2013.**

* During 2011 and 2012, the USGS, FWS, NOAA and EPA will examine existing monitoring information from regional and national programs and compare existing toxicity benchmarks to the monitoring results. In November 2012, after coordinating with the Chesapeake Executive Council and federal partners, EPA will issue a report summarizing this information. The report will also include an assessment of the progress of management actions taken to date pursuant to the Chesapeake Bay Basinwide Toxins Reduction and Prevention Strategy**.\*\*This action is the FOCUS OF OCTOBER 20, 2011 workshop\*\***
* DOI will coordinate with EPA on sampling chemicals in the Bay watershed. The focus will include sampling of selected fish species that have already shown impacts from toxic contaminants, other key indicator species (such as brook trout), and water and sediment samples. Results from an ongoing assessment of emerging contaminants in the Potomac River will be available in 2013. Assessments for the two other largest river basins in the Chesapeake Bay watershed (Susquehanna and James Rivers) will be conducted by 2017 to provide additional information on any emerging contaminants that may pose risks to tidal segments and their respective biotic communities.

**EPA will work with DOI, states and stakeholders to develop strategies for reducing toxic contaminants by 2015.** USGS will supply information from the contaminant assessments to assist FWS and EPA in prioritizing the types and locations of control measures. The strategies may be refined in 2017 as additional information on emerging contaminants in the Bay watershed becomes available. The strategies will address environmental justice issues of concern in the Bay watershed. Agencies will also act now to reduce toxic contamination.

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| 1. ***Invitees and Attendees List for Toxic Contaminant Workshop, Oct 20, 2011*** | | |
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