**Chesapeake Bay Watershed Agreement Management Strategies**

**Toxic Contaminants Goal and Outcomes**

**Policy and Prevention Outcome Draft**

1. **Executive Summar**y
2. **Outcomes and Baselines**

Toxic Contaminants Goal: Ensure that the Bay and its rivers are free of effects of toxic contaminants on living resources and human health.

Research Outcome: Continually increase our understanding of the impacts and mitigation options for toxic contaminants. Develop a research agenda and further characterize the occurrence, concentrations, sources and effects of mercury, PCBs and other contaminants of emerging and widespread concern. In addition, identify which best management practices might provide multiple benefits of reducing nutrient and sediment pollution as well as toxic contaminants in waterways.

Policy and Prevention Outcome: Continually improve practices and controls that reduce and prevent the effects of toxic contaminants below levels that harm aquatic systems and humans. Build on existing programs to reduce the amount and effects of PCBs in the Bay and watershed. Use research findings to evaluate the implementation of additional policies, programs and practices for other contaminants that need to be further reduced or eliminated.

Research Baseline:

Policy and Prevention Baseline: (focused on PCBs in this management strategy; derived from information provided by jurisdiction agencies responsible for issuing fish consumption advisories and implementation of Clean Water Act programs)

* Extensive fish consumption advisories
* Extensive impairments of both tidal and non-tidal waters due to PCBs
* (Information about the existing PCB TMDLs across the Watershed/Formal program progress) – including those that are established as well as those that are under development to be established soon (e.g., MD has several that are out for public comment)

1. **Jurisdictions and Agencies Participating in the Strategy**

The Toxic Contaminants Workgroup (TCW) has succeeded in extensive outreach and engagement of a wide array of stakeholders. Bay Agreement signatories and stakeholders who have indicated their intention to participate in management strategy development have been identified on the workgroup membership list. The membership of the TCW includes members from the following groups:

* Maryland Department of the Environment
* Maryland Department of Natural Resources
* Virginia Department of Environmental Quality
* DC Department of the Environment
* Pennsylvania Department of Environmental Protection
* Delaware Department of Natural Resources and Environmental Control
* New York Department of Environmental Conservation
* West Virginia Department of Environmental Protection
* Federal Agencies: EPA, USGS, FWS, DHS, NOAA
* Non-Governmental Organizations
* Private sector organizations
* Local government organizations
* Academic institutions
* CBP Water Quality Goal Implementation Team Workgroups

**3.a Local Engagement**

Whereas much of the focus on implementation of practices and controls to reduce the amounts and effects of PCBs will initially be targeted to federal and state regulatory programs, there will be many opportunities for local governments, watershed associations, nonprofits, and the private sector to engage in innovative and collaborative efforts. As described above, the TCW has engaged NGOs in the more urbanized areas of the Bay’s tidal waters. This was done to ensure that the organizations in those areas that are influential in local efforts to improve environmental condition (e.g., Blue Water Baltimore, Anacostia Watershed Society, Elizabeth River Project) are represented in the management strategy and also as one element of increasing the diversity of participating stakeholders because these organizations work actively in communities that tend to be socially diverse. In addition the TCW has several members that are from local water authorities (e.g., Washington Council of Governments, Hampton Roads Sanitation District) who are relied upon to help ensure that a local government perspective is considered and included to the extent appropriate in the management strategy. It is the responsibility of all members of the TCW to continually consider the level of engagement and implementation value of local entities in this management strategy. The strategy will be distributed on a regular basis for input from local entities.

1. **Factors Influencing Ability to Meet Goal**

Policy and Prevention Outcome Factors

* Broad geographic extent and distribution of PCBs
* Political will to modify regulatory programs and/or create voluntary programs
* High cost of remedies: in-stream sediment remediation; WWTP modifications; electrical equipment replacements; stormwater controls; site remediation
* Shifting paradigms to acknowledge that there are ongoing sources of PCB loads

1. **Current Efforts and Gaps**

*(This text is retained to guide further development of this section)Identify efforts that are already being taken by jurisdictions, agencies and organizations Identify the gaps that the partnership should fill to meet the outcome. Identify possible interactions with other management strategies/outcomes and any possible efficiencies that might be achievable to avoid duplication, close gaps, and maximize forward efforts. Financial information, including needs and available resources should be identified and included where appropriate.*

To summarize current efforts, the Toxic Contaminants Workgroup has chosen to organize information by PCB loading mechanism. Within each mechanism, the sources of PCBs specific to that mechanism and current programs, gaps and potential additional actions are discussed.

General TMDL and Other Regulatory Efforts

All of the states in the Chesapeake Watershed have identified a large number of waterbodies as impaired for PCBs based on fish consumption advisories. To address these impairments, significant work has been completed in the Region through TMDL development. These projects range in scope from small, segment TMDLs to large, watershed TMDLs. Most notably, multi-jurisdictional PCB TMDLs have been approved for the Delaware River Estuary and the Potomac River. EPA Water Protection Division staff have been actively involved in the development of both of those projects. Multi-jurisdictional TMDLs have encouraged collaboration among government entities, which can lead to more effective TMDL development. It is important to highlight that great progress has been achieved towards reducing levels of PCB in the Delaware Estuary. Under the lead of the Delaware River Commission (DRBC), implementation efforts have resulted in a significant reduction of PCB levels. This approach could be a useful model in future PCB TMDL development.

Virginia is working on TMDLs in the Elizabeth River, the James River, and the New River. Maryland is developing PCB TMDLs in watersheds such as the Severn River, Bird River, Bush River and the Gunpowder River. Also, Maryland and Pennsylvania are planning to sample in the Conowingo Dam to better understand sources and inform TMDL development. Finally, the District of Columbia is working on revising TMDLs for a number of toxic pollutants in order to incorporate daily loads. While much of District’s streams are covered under the 2007 Potomac River PCB TMDL, more work is needed in the Rock Creek watershed. EPA is providing technical assistance on this project through a grant with ICPRB.

The Environmental Protection Agency (EPA) regulates the use, disposal, and clean-up of polychlorinated biphenyls (PCBs) under the Toxic Substance Control Act (TSCA). The Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) program has authority to require investigation and cleanup of a host of hazardous constituent. PCBs are not defined as a hazardous waste under RCRA and are not, in general, a common constituent of concern at RCRA Corrective Action (CA) facilities.  In an instance where PCBs are the main concern at a RCRA CA site, however, the investigation and remediation are conducted under the TSCA program.

The PCB program is managed under the EPA Offices of Chemical Safety and Pollution Prevention (OCSPP), Solid Waste and Emergency Response (OSWER), and Enforcement and Compliance Assistance (OECA). Each Office is responsible for implementing a different aspect of the PCB Program. See Table 1.

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 1** | | | |
| **NPM** | **OCSPP** | **OSWER** | **OECA** |
| **Function** | Implement Regulatory programs related to ongoing uses of PCBs | PCB cleanup and permitting of storage and disposal facilities | Compliance monitoring and enforcement |

In EPA Region 3, the TSCA and RCRA PCB regulations and enforcement are managed by the Land and Chemicals Division (LCD). EPA Region 3 ensures compliance with PCB regulations through its PCB inspection and enforcement program. As part of its annual commitments since 2002, LCD has conducted PCB inspections at facilities throughout the Chesapeake Bay Watershed.  These entities included commercial storage and disposal facilities; facilities that own in-use PCB transformers, and a number of naval ships. Five enforcement action have been undertaken by LCD for violations of the TSCA PCB regulations.

**Stormwater**

**Overview** - Stormwater is a significant mechanism for the transport and loading of PCBs to the surface waters of the watershed. Stormwater transports both dissolved and particulate-attached PCBs. Stormwater in urbanized areas is more likely to be contaminated with PCBs than stormwater in suburban, agricultural, or forested land areas. Stormwater becomes contaminated with PCBs due to runoff from contaminated surfaces (soils, hardscapes). Those surfaces are contaminated due to industrial land uses, spills, and atmospheric deposition of PCBs.

**Stormwater Sources, Current Management Efforts and Gaps**

Contaminated Soils

* Regulated contaminated sites (Site Remediation requires that PCB soil concentrations meet soil cleanup standards protective of human health through soil ingestion, inhalation and dermal contact)
  + CERCLA[Superfund] Contaminated sites regulated under Superfund require remediation of environmental media contaminated with PCBs to levels that do not impact aquatic life and human health.

Within its Chesapeake Bay initiative, the EPA Region 3 Hazardous Site Cleanup Division (HSCD) Site Assessment program is working with the states and other federal agencies to review the existing CERCLIS inventory to create a current status or “baseline” of the three high-urban areas of the Chesapeake Bay that were identified in the past: the Baltimore Harbor, Anacostia and Elizabeth River areas. Sites identified in this review have been or are being investigated for potential cleanup through the CERCLA site assessment process. EPA Region 3 HSCD is working closely with the Maryland Department of the Environment, Virginia Department of Environmental Quality, District of Columbia, and the US Army Corps of Engineers to ensure that these priority areas are assessed under a comprehensive systematic approach.

The purpose of this project was to accomplish identifying and investigating possible land sources of toxic substances including PCBs, which are contributing to contaminated sediments in the Chesapeake Bay watershed. If land sources are identified, these sources may be listed on the National Priorities List (NPL) for potential remedial actions. Also, if other cleanup mechanisms are available, such as state voluntary cleanup programs, the sites may be deferred to the respective jurisdictions. Cleanup of these sources will ultimately assist in developing a comprehensive strategy restoring the three priority watershed areas.

In accordance with the Region III Chesapeake Bay goals, a baseline of 65 sites had been identified in the three priority high-urban areas. Since this initiative began in FY2010, the site assessment program has completed assessments at 62 sites, far exceeding even combined Regional goals. During this time through typical site assessment work and activities, additional sites have been identified within the priority areas, investigated, and added to the baseline. Accomplishments for FY2010 through FY12 are shown in the following chart:

|  |  |  |  |
| --- | --- | --- | --- |
| Fiscal Year | Baltimore Harbor | Anacostia | Elizabeth River |
| 2010 | 4 | 4 | 1 |
| 2011 | 3 | 3 | 2 |
| 2012 | 25 | 16 | 4 |

District Department of the Environment (DDOE), the EPA, DDOE, and the Maryland Department of the Environment (MDE), have been focusing on potential land sources of PCBs that have been found in the sediments of the Anacostia River. EPA has been working with DDOE to address three sites along the Anacostia that are known PCB sources. DDOE has entered into a consent decree with Washington Gas Light and Pepco Benning Road to evaluate and remediate sources of contamination onsite. Also, DDOE is in the process of doing an investigation at Kenilworth Landfill to determine whether remediation is necessary.

The Washington Navy Yard is a site listed on the National Priorities List (NPL) and is located on the banks of the Anacostia River. The site is currently undergoing evaluation and cleanup by the Navy with EPA oversight. Several removal actions have occurred onsite in areas that have been evaluated and were found to contain PCBs. Evaluation and remediation of other areas on the Navy Yard is ongoing.

The DDOE has also been concerned about potential up-gradient sources of PCBs in the Anacostia and its tributaries coming from Maryland. Under a CERCLA pre-remedial cooperative agreement (CA) with EPA, MDE has evaluated five sites in the Anacostia watershed that area adjacent to the Anacostia and/or its tributaries and were known to have used PCBs in the past. Results of these investigations did not show any clear evidence of ongoing PCB contamination into the Anacostia or its tributaries from these five sites.

The Navy is scheduled to perform sediment sampling in the Anacostia River adjacent to the Washington Navy Yard in September 2015. The sampling will include fingerprinting analysis of the PCBs in the river to determine whether a specific signature of the contamination can be traced back to the Navy Yard.

The HSCD Site Assessment Program continues to evaluate sites within the Chesapeake Bay Watershed as part of everyday responsibilities to evaluate sites for the NPL. While the focus has not exclusively been on PCBs, most of the sites are evaluated for the full range of pollutants, which includes PCBs.

While the HSCD Brownfields program has had a tremendous amount of success over the years assessing and cleaning up sites in the Bay watershed, it is difficult to quantify specific types of contaminants being identified or cleaned up on sites.  The program collects general information in the ACRES database (eg. VOCs, PAHS, metals, petroleum, etc), but the database does not have details on the constituents or levels of contamination.  As with Site Assessment, Brownfields does not have any special focus on PCBs, but they are addressed in the program.

The jurisdictions also conduct brownfields assessments using funds that EPA provides to them to support their voluntary cleanup programs. The states may have better data on contaminants being addressed through their voluntary cleanup programs.

* + RCRA Corrective Action

Since FY 2010, EPA Region 3 has focused on reducing toxics in the Chesapeake Bay Watershed with increased emphasis in the three regional priority areas: the Baltimore Harbor, the Anacostia River and the Elizabeth River.  In the FY 2010 to 2014 time period, the EPA Region 3 RCRA CA program expedited cleanups for the 213 facilities within the Chesapeake Bay Watershed. EPA Region 3 hopes to meet or exceed the three RCRA National Program goals within this sensitive ecosystem.  These goals are: to control human exposure to hazardous constituents at RCRA facilities; to delineate and control groundwater releases at RCRA facilities; and, to complete remedy construction at RCRA facilities that permanently eliminates releases to the environment.

PCBs are not a common constituent of concern at RCRA Corrective Action (CA) facilities.  In an instance where PCBs are the main concern at a RCRA CA site, however, the investigation and remediation are conducted under the TSCA program. As of September 30, 2014, EPA Region 3 has made significant progress in the Chesapeake Bay Watershed.  We have determined that human health exposures are under control at 181 facilities (85%); groundwater migration is under control at 170 facilities (80%) and that permanent remedies have been constructed at 123 facilities.  This level of success exceeds the average performance of the RCRA corrective program elsewhere in EPA Region 3, and reflects our commitment to OECA to place higher priority on facilities located in the Chesapeake Bay Watershed.

EPA Region 3 is committed to continue its oversight of the proper use, storage, handling, and disposal of PCBs to prevent environmental contamination and human health exposure. EPA Region 3 will continue to oversee and expedite clean-up activities at all PCB Remediation sites and facilities, and RCRA CA facilities in the Chesapeake Bay Watershed, as well as throughout the Region.

* + Voluntary Cleanup Programs

During fiscal years 2009 and 2010, EPA Region 3 initiated a “PCB Challenge” to 32 companies identified as owning in-use PCB transformers. The challenge aspect was to encourage the owners of PCB transformers to develop and implement a management plan and timeline to remove and properly dispose of them. Through this initiative, the region was able to identify facilities that had already removed their transformers from service and disposed of them, as well as which facilities still maintained in-use PCB transformers. Several companies that did not register their PCB transformers with the National PCB Transformer Database by the due date of Dec 28, 1998 were the subject of subsequent enforcement actions.

As a result of the PCB Challenge, two facilities in the Chesapeake Bay Watershed (Dumfries, VA and Salisbury, MD) agreed to voluntarily remove and dispose of their PCB Transformers. Five of the six PCB transformers owned by these companies have been removed and properly disposed. The sixth is slated for removal in 2015.

Since 2002, there have been 18 PCB cleanups in the Chesapeake Bay watershed that were addressed under TSCA and the self-implementing PCB cleanup regulations. These 18 cleanups have resulted in the cumulative remediation of more than 5 acres of property, and the disposal of more than 2.9 million kg of PCB contaminated media (soil, concrete, building materials, etc.).

EPA Region 3 is responsible for reviewing, commenting and approving or disapproving all submitted self-implementing PCB cleanup plans. Implementation of a cleanup plan is not allowed by the regulations until approval is granted by EPA. EPA Region 3 issues a written decision on each notification/certification for self-implementing PCB cleanup under the Self-implementing PCB cleanup regulations at 761.61(a), which has specific cleanup levels and remedies. Alternatively, an entity may choose to conduct the cleanup under the Risk-based cleanup regulations at 761.61(c), which allow for some deviation from the specific cleanup levels and remedial alternatives, based upon the risk posed by the site. After approval and final cleanup of the site, EPA Region 3 receives a final disposal report and other documentation as necessary to ensure all clean up and disposal requirements were met.

* + Brownfields
* Industrial/commercial facilities with PCB soil contamination due to historical use or from materials/equipment containing PCBs stored on-site (facility may have a general industrial stormwater permit or be unregulated).
* Illegal dumpsites with materials/equipment containing PCBs.
* Construction sites with PCB soil contamination due to historical use or from existing materials containing PCBs. Demolition or remodeling of buildings during construction may also be a source of PCBs to stormwater.
* Regulated stormwater:
  + Phase I/II Municipal Separate Stormwater (MS4) Permits (County/Municipality)
  + Phase II Federal & State Facility Permits
  + Phase I State Highway Administration (SHA) Permits
  + General Industrial Stormwater Permits, General Permit for Construction Activity

**Stormwater Gaps**

PCB Monitoring - Limited PCB monitoring data from NPDES regulated stormwater dischargers.

* Currently Maryland requires no PCB monitoring for Phase I/II MS4s, State and Federal facilities, SHA, industrial stormwater, or construction activity and permittees have not voluntarily conducted monitoring (Other jurisdictions?). Facilities are opposed to using high resolution congener based methods that have not been approved by EPA.
* TMDL programs conduct PCB monitoring to estimate loads from NPDES regulated stormwater dischargers (Phase I MS4s).
* TMDLs do not characterize loadings from regulated industrial stormwater/State and Federal facilities with the potential to discharge PCBs due to historical use or operation/storage of PCB containing equipment/materials.
* TMDL programs have limited resources to monitor stormwater.
* Limited PCB monitoring data for atmospheric deposition.

Sormwater Regulatory Gaps

* No regulation of operational transformers containing PCBs (PCB free – less than 50 ppm) which have the potential to discharge PCBs during failure which may be a source of PCBs in NPDES regulated and unregulated stormwater.
* No regulatory requirement for PCB effluent concentrations in regulated stormwater discharges to meet human health criterion (Non-numeric WQBEL/PMPs) unless a TMDL is established assigning a reduction.
* Contaminated sites are regulated to ensure protection of human health through direct exposure and do not consider potential impacts through fish consumption. Responsible parties for contaminated sites are not required to determine whether stormwater PCB concentrations are in violation of human health water quality criteria. Ecological Risk Assessments for contaminated sites evaluate toxicity to aquatic life; however, they do not consider potential carcinogenic effects from human consumption of aquatic life.
* Transformers/electrical equipment/light ballasts in operation (industrial/commercial/residential)

Stormwater Programmatic Gaps

* No standardized framework for Pollutant Minimization Plans to identify and reduce PCBs from NPDES regulated and unregulated stormwater.
  + Source tracking methodology for NPDES regulated and unregulated stormwater.
  + BMP and treatment technology to remove PCBs from NPDES regulated and unregulated stormwater.
* Evolving knowledge regarding the effectiveness of existing stormwater BMPs which are designed to trap sediments and may result in a secondary benefit of removing PCBs.
* Limited public knowledge of PCB sources within the watershed and the potential for these sources to contribute PCBs in NPDES regulated or unregulated stormwater (e.g., operational transformers, building materials, paints, illegal dumpsites, illicit spills, etc…)

Research Gaps - assessing potential sources of PCBs from stormwater.

* Limited knowledge of PCBs in biosolids and the potential for land application to be a transport pathway for PCBs in NPDES regulated and unregulated stormwater.
* Limited knowledge regarding atmospheric sources of PCBs.
* Limited knowledge of PCB contamination in dredged material from maintenance of stormwater BMPs and potential for land application to be a transport pathway for PCBs in NPDES regulated and unregulated stormwater.
* Limited knowledge regarding historical activities at a subset of regulated facilities. For example, construction sites may have the potential to discharge PCBs from soil disturbance or demolition/remodeling due to historical use or existing PCB containing materials.
* Limited PCB monitoring data using high resolution congener based methods (EPA Method 1668).
  + Contaminated sites are required to use Aroclor based methods (EPA Method 608) to assess PCB concentrations in soil. Detection levels for this method are sufficient to assess violations of soil cleanup standards.
  + Soil concentration data is insufficient to accurately estimate loads from contaminated sites to determine potential impacts on water quality.

Land application of PCB containing materials.

* Biosolids from WWTPs.
* Dredged materials from maintenance of Stormwater BMPs.

Illicit discharges/spills of PCBs.

**Wastewater**

**Overview** - Surface water contamination from PCBs may occur through both industrial and municipal wastewater discharges; however the presence of PCBs in effluent is highly dependent on the particular site or facility. If elevated concentration of PCBs are a concern for an industry, wastewater contamination can occur through exposure of process waters to residual PCBs from historical spills, through the inadvertent production of PCBs from the process itself or from intermediary materials used in the process, or from the recycling of products that contain residual inadvertently produced PCBs. Exposure of stormwater to historic spills on industrial sites may also be a loading source. Similarly, if elevated concentrations of PCBs are a concern for a municipal discharger, potential PCB sources can include light industrial waste water, contaminated sites contributing to combined sewer overflows (CSO), inflow & infiltration from contaminated sites, or residual contamination in the municipal pipe infrastructure from historic spills. PCBs may also enter municipal systems via surface water used for potable water. Due to the highly varied nature of the sources to municipal facilities, identifying the potential source or sources presents a unique challenge as compared to industrial dischargers.

**Wastewater Sources, Current Management Efforts and Gaps**

Industrial and Municipal Wastewater

TMDLs are the primary mechanism for addressing PCB impairments for the Chesapeake Bay Watershed. *(Insert language to reference TMDL efforts, completed and underway, and point to graphic.)*

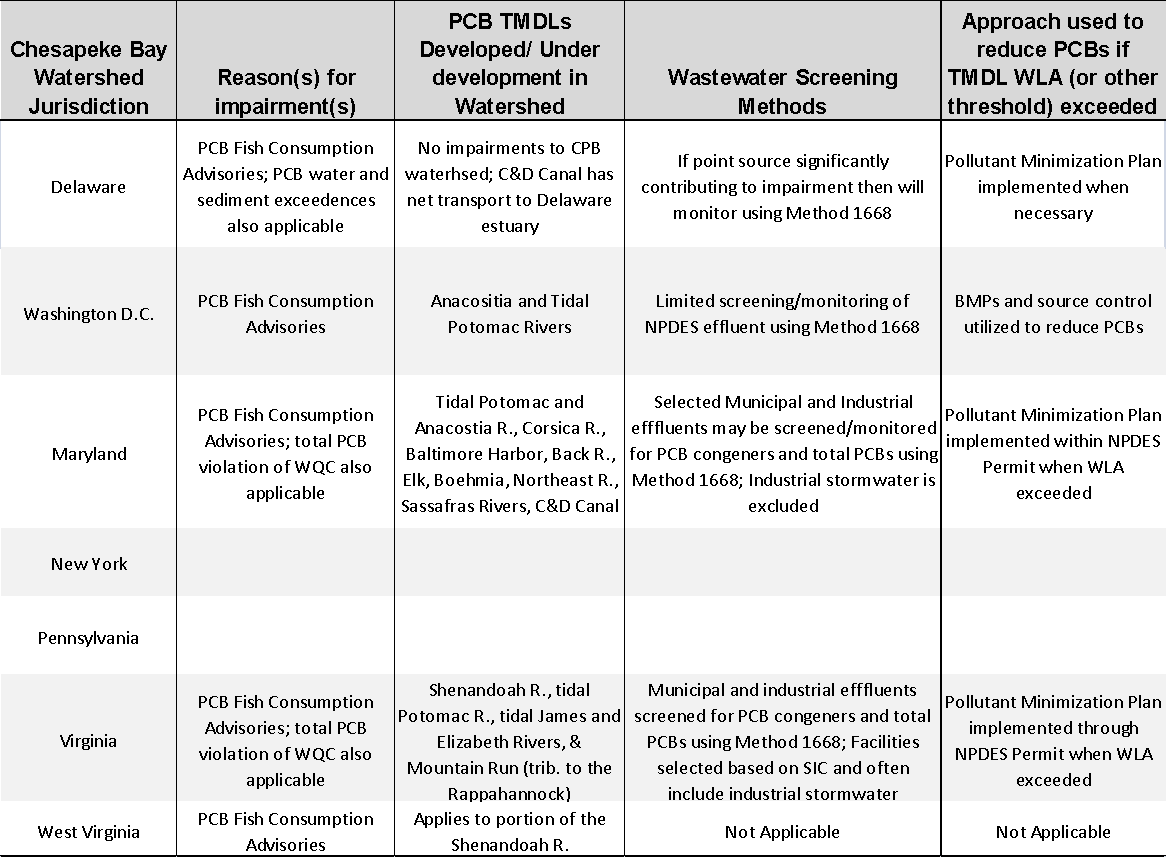
Until recently it was not apparent wastewater could serve as a PCB conduit to the Chesapeake Bay watershed. Dating back to the early 1980’s and extending to more a recent time, this extremely hydrophobic contaminant was not detected in wastewaters using 40 CFR promulgated analytical methods. With the availability of improved analytical tools to screen wastewater at environmentally relevant concentrations (low part per quadrillion), determining whether PCBs are present can now be made in any matrix, including wastewater. Low level (part per quadrillion) water quality criteria have been promulgated by each Bay jurisdiction intended to protect fish from bioaccumulating PCBs at concentrations considered unsafe for human consumption.

Once PCB fish consumption advisories have been created for a water body there is a requirement for a TMDL study or similar approach to restore the impairment. A critical component to the TMDL study is identification and delineation of all prospective PCB sources. In the majority of PCB impaired water bodies, the potential for wastewater as a source requires examination.

At the present time most jurisdictions in the Bay watershed have developed PCB TMDLs. With emphasis on the wastewater loading mechanism for purposes of this discussion, Table x provides a summary of jurisdictional activities used to address PCBs. There are moderate differences among the jurisdictions on the types of facilities selected to monitor for PCBs in wastewater. Delaware, Maryland, Virginia, and Washington D.C. approach the screening of municipal and industrial facilities in a similar manner although there are variants in the types of facilities that are assessed. For example, Virginia adheres to guidelines predicated on the Standard Industrial Classification (SIC) used in the NPDES Permitting Program, for identifying and selecting a broader array of industrial facilities known to be potential PCB sources. The numbers and type of samples collected and analyzed at a facility may vary depending on the jurisdiction. In all cases when a jurisdiction is developing a PCB TMDL and monitoring occurs for that purpose, a low detection, high resolution method is used that is also capable of detecting 209 PCB congeners.

Upon generating the low level PCB data, total PCB concentrations are converted to a mass loading and then compared to the TMDL derived Waste Load Allocation (WLA). If there is an exceedance of the WLA, the reduction is often addressed as a non-numeric Water Quality Based Effluent Limit (WQBEL) administered through each jurisdiction’s respective NPDES Program as a Pollutant Minimization Plan (PMP).

Table x. Comparison of Chesapeake Bay jurisdictions PCB screening methods and approaches used to attain reductions.



TMDL Implementation and Wastewater

In situations where an industrial or municipal facility has an effluent loading in excess of the assigned wasteload allocation (WLA), a pollutant minimization plan (PMP) may be utilized to reduce PCB loadings through adaptive implementation in order to meet the WLA. PMPs are intended to be flexible tools that allow dischargers to identify and respond to potential sources in the most effective manner possible. Numerous examples of PMPs exist along with guidance that can be used in the development of PMPs (see Appendix x – will include Delaware River links, Michigan PMP, Camden City, Palo Alto Regional Water Quality Control Plant, DEQ NRO approved PMP insert?).

The basic elements of the PMPs may include a better characterization of PCB loadings into the system under varying conditions as needed in order to provide the permittee with additional information that may aid in source identification; proposed actions for known or potential sources; proposed actions to find and control unknown sources; and an identification of the methods used to measure, demonstrate and report progress. The sensitivity of the analytical method(s) used for PCB identification in monitoring or track-down studies must be aligned with the detection and quantification objectives of the study.

(From EPA R3 ) - TMDL loads were assigned to point sources and permitting authorities struggled with the permitting process. Loads where often very small with no practical treatment available. Many times, depending on the point source location in the watershed, PCBs already existing in the environment pass through a facility’s treatment trains. Many of these facilities were not sure whether they were adding or removing PCBs. Sampling wet weather and dry weather flows with sensitive methods is used to determine the actual input of point sources, and, if it was concluded that they had input, they are required to implement a pollutant minimization program.

Initial Results from TMDLs

|  |  |
| --- | --- |
| Examples of Preliminary Source Identifications | |
| Delaware River: Point Sources | USX Steel Fairless Hills, PA (removed transformer oil , PCB debris and capacitors, contaminated sediment; initiated Stormwater control)  Amtrak Wilmington, DE(removed contaminated sediment; redesigned stormwater system)  Calpine Deepwater Energy Facility (transformers removed, cleaned catchments and stormwater lines, installed Geotextile filter baskets and filter guards)  Refineries (need to confirm which ones and what was done)  City of Wilmington Solid Wastes Storage (leachate; in the past collected contaminated sludge from a Treatment plant, need to confirm what was done) |
| Delaware River: Non-point Sources | Exxon Mobil, Paulsboro NJ (tidal wetland containing PCB, excavated contaminated material)  Numerous other examples including sites in Delaware and Pennsylvania |
| Camden County Municipal Authority, New Jersey | Trackdown studies identified sewer interceptors with elevated PCB sediment concentrations  Scrap metal yard – stormwater runoff ended up at plant  Existing and abandoned industries contributing PCBs (potential sources) : Paper and Allied Products, Rubber and Misc. Plastics, Primary Metal Industries, Fabricated Metal Products, Transportation Equipment, Electric, Gas, and Sanitary Services  Increased solids removal efficiency at WWTP (reduced its average effluent TSS from 26 ppm to 7 ppm, resulting in a 20% increase in sludge collected through the treatment plant )  Installed CSO Solids Removal devices |
| Tinicum Township, Delaware | * + - * Increased solids removal efficiency at WWTP       * Annual sediment removal at pump stations       * Trackdown studies have identified source of PCBs at Airport Business Complex         + Sewer relining to eliminate infiltration |
| Anacostia (environmental investigation and cleanup work is completed, underway, or contemplated): | * Kenilworth Park Landfill * Pepco Benning Road Facility * CSX Benning Yard * Steuart Petroleum Company Terminal Adjacent to the Washington Gas Light Company (WGL) * East Station Site * WGL East Station * Washington Navy Yard * Active Capping Pilot Study Site at O Street Combined Sewer Outfall (CSO) * General Services Administration (GSA) Southeast Federal Center (SEFC) * Former Steuart Petroleum Company/Hess Oil Corporation(Hess)/Gulf Oil Corporation (Gulf) * Former Petroleum Terminals * Joint Base Myer – Henderson Hall (Fort McNair) * Joint Base Anacostia – BollingFirth – Sterling Steel Company |

Wastewater Efforts – Combined Sewer Systems

In a combined sewer systems (CSS), both stormwater and sanitary sewage are conveyed to a wastewater treatment facility. If a wet weather event generates a stormwater volume that exceeds the capacity of the collection system and/or treatment facility, a portion of the combined waste stream is diverted to combined sewer outfalls resulting in a combined sewer overflow (CSO). Depending on the system, the combined release of stormwater and untreated wastewater may be a conveyance mechanism for PCBs to local waterways. CSS communities in the Chesapeake Bay watershed are implementing measures to reduce the frequency of CSOs which could have a concurrent benefit of reducing the loadings of PCBs to surface waters. Several of these communities are pursuing an integrated planning approach that allows the community to prioritize the wastewater and stormwater management activities for the greatest water quality benefit.

Wastewater Gaps

Information on Localized Air Deposition

The lack of PCB air depositional data is of particular concern because it limits our ecosystem-scale understanding of the delivery mechanism of PCBs to the Chesapeake Bay watershed. It is of regulatory relevance because permit holders of storm water-derived effluents believe that air deposition comprises a significant portion, if not all, of their PCB loads. Municipal effluent permit holders also maintain that their PCBs are derived from the intake water from rivers that in turn contain background PCBs derived from atmospheric fluxes. Consequently, there is a need to 1) provide reliable PCB air deposition flux data for the purpose of calculating representative loads, and 2) determine the spatial contribution from air deposition fluxes to different land use areas throughout the Bay watershed. Add a reference to research management strategy.

Tools to Support Trackdown Studies

The current high resolution analytical method is expensive relative to the costs associated with most other organic contaminant monitoring and may be cost-prohibitive for large-scale trackdown studies. An inexpensive tool that can provide real-time data can greatly improve the efficacy of a trackdown study in municipal service areas. Information regarding lessons learned in other PCB trackdown studies would be useful in guiding municipalities in their own local efforts.

Disconnect between CERCLA, RCRA, TSCA and CWA targets

Three issues relating to PCB investigations and remediation could benefit from EPA guidance. First, there are inconsistencies across programs in the methods used to analyze PCBs in environmental media. Second, the remediation levels that have historically been used to clean up soil and sediment are not low enough to prevent bioaccumulation into tissues of fish and other organisms consumed by humans. Third, lack of coordination among programs may lead to inconsistencies in approaches to PCB investigation and remediation.

Inadvertent Production of PCBs

While PCBs have been banned since the late 1970’s, the Toxics Substances Control Act (TSCA) continues to allow the inadvertent manufacture of PCBs. The allowed concentration is up to a maximum of 50 parts per million (ppm) provided an annual average of 25 ppm is met by the manufacturer. As PCB data are made available from wastewater monitoring using a sensitive method, it is becoming more evident that PCBs inadvertently produced are ending up in the environment. Prime examples include PCB congeners 11, 206, 207, 208 and 209.

**Groundwater**

**Overview** – Groundwater can be a loading mechanism for PCBs particularly when it underlies highly contaminated surface soils. Contaminated groundwater that is near edge of stream are more likely to contribute to bio-availability of PCBs than upland groundwater.

**Groundwater Sources, Current Management Efforts and Gaps**

Underground Injection Control - The Underground Injection Control (UIC) program under the Safe Drinking Water Act (SDWA) will continue to conduct inspections of close endangering shallow injection wells. EPA has one grantee conducting these inspections part-time.

Drinking Water - Data is collected and managed on public water supplies located in the Chesapeake Bay watershed. Data on exceedances of Maximum Contaminant Levels (MCLs) or drinking water standards, and detections of unregulated contaminants under the Unregulated Contaminant Monitoring Rule (UCMR) cycle 1, 2 and 3 from public water supplies are available. These unregulated contaminants are of health concerns and EPA needs to obtain their occurrence in order to decide if they should be regulated in the future. Cycle 1 and 2 were completed earlier and cycle 3 just began in January 2013 and monitoring is still ongoing. Determining the contaminants for Cycle 4 will begin in 2015 and data collection is estimated to begin in 2017.

**Atmospheric**

**Overview** – Atmospheric loads occur both as indirect loading to the land surface which is transported to surface waters mostly through stormwater and as loading that is directly deposited on surface water.

**Atmospheric Sources, Current Management Efforts and Gaps**

- Subject background with reference to various atmospheric studies in and outside of region

- note wet/dry deposition

- discussion of the two impact areas

- Direct deposition to CB waterbodies (what most TMDLs have referred to as atmospheric deposition loadings)

- note Tom Fikslin's comments about estuary can become atmospheric source via flux as PCB inputs are reduced over time.

- Atmos. deposition directly within the watershed

- Negative impacts to MS4s, CSOs, etc. and consequences of status quo

- These loading are encompassed into different sector loadings.

- e.g. - MS4 WLAs could be attributed to the following likely sources.

- illicit cross connections.

- runoff from contaminated sites

- atmospheric sources

(note: MS4s are not generators of PCBs, but get stuck holding the bag to fix the loading due to the nature of their discharge permits)

- Ongoing generation sources

- fuel oil burning facilities within watershed

- Note disconnect between fed. Air/water/waste programs using low level PCB analyses (methods 608 & 8082) vs TMDLs using EPA Method 1668

**Atmospheric Gaps**

* consistency between multimedia programs (Air, Waste, Water) for PCB analyses (this is a national issue that the CBP could be a leader on; not limited to CB region).
* integration of Method 1668 in areas where high level are not expected; EPA needs to codify method in CFR. Been stalled for over 8 years.
* Use of methods 608 and 8082 should still be used, but in limited areas where PCB # expected to be high
* limited stack monitoring of fuel oil burning facilities in order to determine the nature of the issue. Evidence supports this is a problem, but little data exists to quantify true atmospheric loadings (potentially controversial, but evidence supports the need)
* new atmospheric deposition studies in the watershed. Current studies from late 1990's. Much has changed since then. (some PCBs likely have transformed due to Env. weathering)
* Provide independent, published 3rd party citations to provide scientific foundation of the above.

- Critical in order to establish credibility regarding the issue.

**In-Stream Sediment**

**Overview** – In many areas of the watershed, PCB-contaminated sediments have accumulated on the bottom of streams, rivers, embayments and the Bay. The contamination comes from many sources and its presence is explained by the high affinity for PCBs to bind with sediment and be transported by surface waters. These sources and transport lead to the accumulation of contaminated sediments.

**In-stream Sediment Sources, Current Management Efforts and Gaps**

Defining the source of anthropogenic contamination into waterway sediments can be a difficult task. This is particularly true in settings where multiple point sources are present along with persistent non-point sources. This situation often results in complex mixtures of contaminants in sediments.

Remediation of PCB-contaminated sediments may affect local and downstream water quality during activities such as dredging and dewatering. The Clean Water Act establishes requirements and discharge limits for actions that affect surface water quality. Accordingly, the technical requirements of permits, such as the National Pollutant Discharge Elimination System (NPDES) permit, may have to be met.

Within the Chesapeake Bay watershed, several current monitoring, restoration, and regulatory programs will reduce PCB loads from both point and non-point sources. These programs involve storm water runoff controls, erosion control measures to reduce sediments and nutrients, identification of additional PCB sources and contaminated sites, non-numeric water quality based effluent limits, construction site inspections, and remediation of contaminated sites. Follow up monitoring of sediments is an important feature of each jurisdiction’s implementation strategy.

The District of Columbia (DC) provides examples of ongoing cleanup activities occurring within the Bay region. For these, DC has several well-established programs to draw upon for their PCB TMDLs, including the Erosion and Sedimentation Control Amendment Act of 1994 and DC Law 5-188 (Storm Water Management Regulations – 1988) of The District of Columbia Water Pollution Control Act of 1984, and the Federal Nonpoint Source Management Program (Section 319 of the Clean Water Act).

The District, under authority of various laws, implements a number of action plans that involve reviewing and approving construction plans for stormwater runoff control measures, erosion and sediment control measures, and landscaping; conducting routine and programmed inspections at construction sites; providing technical assistance to developers and DC residents; and conducting investigations of citizen complaints related to drainage and erosion and sediment control. In conjunction with regulatory activities, voluntary programs are implemented through the Non-point Source Management and Chesapeake Bay Implementation programs. It is expected that through implementation of sediment and nutrient control measures sediment-laden pollutants, including PCBs, will also be removed.

Region 3 is currently overseeing a PCB clean up at the Lockheed Martin plant located in Middle River, Maryland.  The Middle River facility is located on Cowpen Creek which contains contaminated sediments considered to be a major contributor to PCBs in the Bay.  Lockheed Martin owns the site, where it assembles military launch electronic systems.  The clean-up is being done under TSCA authority and will be broken up into 3 phases:

1. Expedited sediment removal action (2014): dredging 1.2 acres containing sediments with the greatest amount of PCB contamination (3600 ppm) is underway;
2. Full sediment remedy (2016-2018):  additional removal of 13.8 acres will begin in 2016-2017, and activated carbon in-situ treatment over 10.2 acres (remedial goal of 0.676 ppm expected to be reached after 7 years of in-situ treatment); and

3. Full soil remedy.

**5.a** **Actions, tools or technical support needed to empower local government and others.**

There is a need for communications tools that will emphasize the connection between PCBs and human health especially with regard to risks from the consumption of contaminated fish. It is expected that such information will motivate local and state-level governments to continue to apply public resources to mitigate and reduce PCBs with the additional benefit of raising awareness of safe levels of fish consumption for anglers in the watershed.

The management strategy will need to develop several opportunities and initiatives to help raise the capacity of local communities to address PCBs and other toxics contamination within their respective waterways. To this end, the policy and prevention component of the toxics management strategy will focus on two core areas of concern for local engagement: public awareness and technical capacity.

1. **Management Approach**

The TCW’s objective is to develop a management approach that adds value to the ongoing work of jurisdiction, federal, and local entities with respect to PCB controls and reductions. In keeping with the Chesapeake Bay Program Partnership’s (the Partnership) mission, the TCW will look for opportunities to accelerate, enable and continually improve the management actions described above, finding synergies and opportunities to share information across the partnership about what approaches are most cost effective (including based on information from other watershed programs).

The management approach described below identifies near term actions that are directly focused on management actions to reduce PCBs as well as the continuation of data synthesis and analysis to enhance future decisions on how the Partnership can enhance existing efforts. A key objective in the management approach is to seek out innovation and develop new commitments and stakeholder partnerships that will work to reduce PCBs within regulatory programs and across voluntary programs.

The approach will follow analysis of the relative size of the PCB load across the different loading mechanisms and sources followed by assessment of where there are opportunities to enhance existing programs for those sources and to create new programs. The management approach will be highly influenced by what we learn from other watersheds (e.g., Delaware Bay and the Great Lakes) as far as identifying management actions with the lowest cost to highest benefit.

Stormwater Regulatory Approaches

* Permit requirement for NPDES regulated stormwater dischargers to monitor outfalls and apply high resolution congener based PCB analytical methods (EPA 1668). This requirement would also include industrial stormwater permittees with the potential to discharge PCBs due to historical use or operation/storage of PCB containing equipment/materials.
* Monitoring requirement for regulated contaminated sites to apply high resolution congener based PCB analytical methods (1668) for all environmental media (soil, groundwater, sediment, and surface water).
* Ecological Risk Assessment requirement to evaluate carcinogenic effects due to human consumption of PCB contaminated fish (human health criteria as endpoint).

Stormwater Programmatic Approaches

* Develop inventory of existing PCB data for NPDES regulated stormwater dischargers (outfall concentration data and TMDL loading information).
* Research initiative to investigate the PCB removal effectiveness of existing stormwater BMPs.
* Development of BMP guidance for reducing PCBs in NPDES regulated and unregulated stormwater
* Develop educational workshops to provide public and regulated stormwater permittees with knowledge of PCB sources and what can be done to reduce discharges of PCBs to NPDES regulated or unregulated stormwater.
* Voluntary action program to remove/retrofit transformers classified as PCB free (less than 50 ppm) in operation and eliminate PCB contamination on-site due to releases from these materials. This effort could also include other operational PCB containing equipment (e.g., fluorescent light ballasts).
* Develop inventory of existing contaminated site PCB concentration data (soil, sediment, and water column media).
* The EPA Region 3 HSCD Site Assessment program is currently working on a GIS project to identify potential land sources of contamination along the Elizabeth and James Rivers. This project is not limited to PCBs, but any potential source of contamination along these rivers. Currently, GIS maps have been made that show locations of all CERCLA and RCRA sites in the area in addition to many layers of environmental data and potential receptors that will help to focus on priority site evaluations. This project could be further prioritized to focus on potential land sources of PCBs.

If there are other priority areas to be focused on, HSCD could provide similar GIS maps for those areas as well. However, if potential sources are identified, due to resource constraints in the HSCD Site Assessment Program, the number of sites that could be scheduled for site inspection and assessment for this project will be limited.

The HSCD Site Assessment Program will conduct workshare meetings with our State counterparts once per year. During these meetings, the EPA and States will share information on sites that are currently active and together determine who will be the lead agency for further investigation. Participants could focus on the evaluation, or re-evaluation of any potential PCBs sites that are on our active sites list that are within the Chesapeake Watershed.

* The HSCD Brownfields program could offer to conduct Targeted Brownfields Assessments (TBAs) to assist in evaluating contamination levels on PCB sites of interest.

Stormwater Research Approaches

* Research initiative to investigate the potential for construction activity sites to discharge PCBs from soil disturbance or demolition/remodeling due to historical use or existing PCB containing materials.
* Research Initiative to investigate PCBs in biosolids and the potential for land application to be a transport pathway for PCBs in NPDES regulated and unregulated stormwater.
* Research Initiative to identify atmospheric sources of PCBs, characterize PCB concentrations in atmospheric deposition to the watershed and Bay, and determine the significance of these sources for bioaccumulation in fish. As a part of this study, congener distribution profiles for PCBs in atmospheric deposition would be evaluated to determine whether mid-weight congeners are present at levels that significantly contribute to bioaccumulation in fish.
* Research initiative to investigate PCB contamination in dredged material from maintenance of stormwater BMPs and the potential for land application to be a transport pathway for PCBs in NPDES regulated and unregulated stormwater

Wastewater Approaches

* Support additional research on localized air deposition.
* Support research on cost-effective tools for track-down studies and provide a mechanism for municipalities to share information on lessons learned from PMP development and implementation strategies. A workshop in addition to a dynamic database that is voluntarily updated by participating municipalities as new information becomes available would be useful.
* Encourage EPA to provide guidance on integration the various programs addressing toxics to reduce inconsistencies in analytical methods, target thresholds, and investigation and remediation approaches.
* It may be possible to explore opportunities to reduce the inadvertent manufacture of PCBs through the implementation of Pollution Prevention measures at applicable manufacturers. Review ECOS resolution on PCBs for additional opportunities to reduce the inadvertent manufacture of PCBs.
* (From EPA R3) - The EPA R3 NPDES Permits Branch will be dealing with the issue of toxics through the Clean Water Act (CWA) framework.  Where waters have been identified as impaired and a Total Maximum Daily Load (TMDL) has been established creating Waste Load Allocations for point sources, the NPDES Permitting program will ensure that permits are consistent with the TMDL.  The NPDES Permitting Program will draft and review permits with a focus on ensuring that toxic WLAs are clear and enforceable.  The NPDES Enforcement Program, through state oversight and its independent compliance monitoring and enforcement authorities, will ensure that these compliance limits are met.  If a permittee is in non-compliance with its compliance obligations, EPA will take appropriate timely and appropriate action, including exercising its enforcement authority, to ensure that the permittee is returned to compliance in an expeditious manner.

General TMDL Approaches

(From EPA R3) The Chesapeake Bay Program strategy could be used to fill gaps, encourage innovation, and to champion best practices. Some recommendations include:

* If opportunities exist for a multi-jurisdictional PCB TMDL, provide organizational and technical assistance.
* Coordinating with the states in conducting consistent implementation measures throughout the Bay watershed.
* Providing technical support to understand whether PCB impairments could be addressed through a TMDL alternative. TMDL alternatives are a new approach that have been given to the states through the long-term version for the 303(d) program and which allows for addressing an impairment without necessarily developing a TMDL. This approach may be valuable in waterbodies where there are not very many permitted sources.
* Encourage use of method 1668 to analyze PCBs as it is the most sensitive method. This would ensure that PCBs are being characterized accurately.
* Encourage thoughtful consideration of TMDL endpoint. In particular, whether the ambient water quality standard or the fish consumption value should be used.

In-stream Sediment Approaches

Effective management of PCB-contaminated in-stream sediments is often challenging. Many PCB-contaminated sediments can be large, measured in acres or river miles--or in tons of sediment. The sheer volume and mass of PCB-contaminated in-stream sediments makes the application of any remediation option a difficult task. The implementation of a comprehensive risk-management strategy is even more complex. Management of these sites is further complicated by the fact that many of the sediments also contain other chemicals of concern, including polycyclic aromatic hydrocarbons, metals, and pesticides. The time required to design and implement a management strategy and to evaluate its effectiveness might reasonably range from years to decades.

The paramount consideration for PCB-contaminated sediment sites should be the management of overall risks to humans and the environment rather than the selection of a remediation technology (e.g., dredging, capping or natural attenuation).

Recognizing the challenge of these contaminated in-stream sediments, an initial goal for this portion of the Toxic Contaminant management strategy is to assess the Total Maximum Daily Loads (TMDLs) implemented by CBP members to reduce nutrients and sediment which will also reduce toxic contaminants, and identify the relative amount of reduction that might occur across the range of best management practices (BMPs) to the extent such information exists.

To meet this goal, a study will be conducted to identify in-stream toxic contaminants or contaminant groups (e.g., polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and agricultural pesticides) affected by BMPs. The BMPs will be cross-correlated with contaminant loading mechanisms and their association with land use and industrial sources (e.g., urban stormwater, agriculture, landfills, dredged material disposal facilities, hazardous waste sites, and industrial operations).

The study will assess and explanation of the most beneficial management actions that could leverage current TMDLs and watershed implementation plans (WIPs) to achieve multiple benefits for nutrient, sediment, and toxic contaminant reductions. And, the study will identify conditions that might be relevant and necessary (e.g., siting, construction, and operation) for BMPs to result in toxic contaminant reductions.

**6.a** **Local Engagement**

In the more urbanized areas of the Bay, Baltimore, Washington D.C. and Norfolk/Elizabeth River, the TCW will continually coordinate and engage with NGOs and state and local governments as the management strategy is developed and implemented.

Recognizing that the general public and, even, local professionals do not understand well the extent and impact of PCBs and toxics contamination of their waterways, the management strategy will seek to raise baseline awareness with respect to the presence and extent of PCBs contamination in local communities, known and potential human health impact (especially with respect to fish consumption practices), and the sources and transport dynamics of PCBs contamination. First, the TCW will identify and prioritize communities for targeted outreach, based upon known levels of contamination, known and assumed levels of awareness, and known and assumed community risk of exposure.

Working with local government and non-profit organizations, the TCW will develop communications materials and corresponding procedures for their dissemination throughout the targeted communities. Building upon the fish contamination data collection and assessment efforts of state fish consumption advisory programs and through the aggregation of local/state/federal data on known sources of PCBs, the communications materials will expand upon and provide more and better narrative description about PCBs and toxics contamination of local waterways, the sources and transport dynamics of the PCBs (best available research), and more extensive explanation and interpretation about human health risks from fish consumption-based exposure (best available research). The materials will include individual watershed/jurisdiction reports as well as presentation materials for use by local government and non-profit employees for dissemination in various venues (e.g. neighborhood association meetings, classrooms, etc.). The TCW will also make the communications materials available online.

The TCW will also organize, through the assistance and guidance of PCBs experts and academic researchers, several training workshops for local government and non-profit employees to gain technical capacity for the monitoring and investigation of PCBs sources within their respective jurisdictions. The workshop will present several different approaches to source-tracking PCBs, including consideration of various factors (e.g. varying land use; financial resources; stormwater infrastructure, etc.). The workshops will present best practices for conducting chemical and biological source tracking of watershed PCBs sources, as well as best practices for conducting historical (e.g. what public and private records to review, how to access those records, etc.) and community-participatory research (i.e. survey community members for knowledge about current and historic formal/informal dumping sites that could be a source of PCBs contamination). Finally, the TCW will work with local non-profits to explore the use of volunteers for support the work of PCBs source-tracking, identifying the best opportunities for volunteers to receive technical training to support PCBs field sampling activities (e.g. volunteer MS4 outfall sampling programs such as Blue Water Baltimore’s Outfall Screening Blitz) and community-participatory research into local environmental history (e.g. need good example here of CBPR historical research).

1. **Monitoring Progress.**

Three types of progress monitoring will be pursued:

1. Progress on completion of planned activities for actions not directly under the direction of the Partnership and progress for activities for which the TCW is directly committing to oversight and dedication of resources of the Partnership
2. Assessment of whether planned actions are having the result expected
3. Environmental monitoring to track response of the system as the strategy is implemented (to the extent possible given the high cost of PCB monitoring and the lag time that will influence how quickly an environmental response is detectable)
4. **Assessing Progress**

For type 1) progress monitoring as described above, the frequency of assessing progress will be at least annual so that adjustments to the biennial workplan can be made to accommodate changing circumstances and availability of resources. Formal review of type 1) progress data will be completed through the update of the biennial workplan.

Progress assessment based on type 2) and 3) monitoring will be conducted on an as-available basis. These types of monitoring generally will involve measurements of environmental response and environmental condition, which do not necessarily occur at regular intervals and will be contingent on availability of data and/or monitoring funds.

1. **Adaptively Manage**

Adaptive management will focus foremost on monitoring information described under type 2) above where there will be assessment of whether management actions are having the expected results in terms of PCB reductions. Over time, it is expected we will learn which loading mechanisms and sources provide the greatest opportunities for continued reductions.

Other adaptations to the strategy will result from assessing the long term response of the system (type 3 monitoring above) and, in the short term, whether the TCW and other entities are completing work as planned (type 1 monitoring above).

1. **Biennial Workplan** *summarize the commitments, actions and resources that each jurisdiction, federal agency and partner will take to help achieve each of the outcomes*

Biennial workplan to be developed

Appendix A - Overview of PCB TMDL Activities in the Chesapeake Watershed

TMDL Development in Maryland

1. Characterization of NPDES regulated and unregulated stormwater PCB loads.

a. Water quality monitoring is conducted in non-tidal streams to characterize PCB concentrations throughout the watershed.

b. A congener based method developed by UMCES CBL is used to measure PCB concentrations.

c. Total watershed PCB load is estimated based on watershed PCB monitoring and USGS flow data.

d. Total watershed load is broken out between NPDES regulated and unregulated stormwater based on the percentage of urban/non-urban land use.

2. NPDES regulated stormwater load is an aggregate of all permittees:

Phase I/II MS4s, Phase II State & Federal Facilities, SHA, General Industrial Stormwater and General Construction Activity). Loads from individual dischargers are not characterized within the framework of a TMDL due to limited resources for monitoring all stormwater sources.

3. TMDLs assign a load allocation (LA - non-point source) to unregulated stormwater and a waste load allocation (WLA - point source) to NPDES regulated stormwater.

4. TMDLs for watersheds with no Phase I/II MS4 permits are assigned a baseline load for unregulated stormwater for the entire drainage area.

Localized stormwater conveyance may still be present in these systems even if a permit has not been assigned.

TMDL Implementation in Maryland

1. Implementation will be required if the TMDL assigns allocations for unregulated or regulated stormwater which require a reduction from the baseline (current) load.

2. Load allocations for unregulated stormwater which require reductions are addressed through TMDL implementation plan. There are no additional regulatory mechanisms at the State level to address unregulated stormwater. Currently no State level implementation plans have been developed for PCB TMDLs.

3. WLAs for regulated stormwater subject to a Phase I MS4 permit which require reductions are addressed through permittee-developed implementation plans. Phase I MS4 Counties are required to develop an implementation plan for applicable EPA approved WLAs within one year of the permit issuance (for existing TMDLs) or within one year of TMDL approval by EPA (for TMDLs issued during the permit term).

a. MDE provides guidance for implementation plans suggesting the following components (INCLUDE ELEMENTS and link)

b. Montgomery County has developed a plan which has been approved by MDE (INCLUDE LINK). Baltimore County, Baltimore City, and Prince George’s County have developed plans that are currently under review by the MDE.

TMDL Development

1. Characterization of contaminated site PCB loads.

a. TMDL Program uses a database maintained by Land Management Program to identify contaminated sites with PCB contamination.

b. TMDL program obtains PCB soil concentration data from site assessment reports.

c. Soil PCB concentration data from these reports are typically measured using low resolution aroclor based methods (EPA Method 608), generally resulting in non-detects.

d. Loads are estimated based on average soil PCB concentration data and average soil loss modeled using RUSLE (Revised Universal Soil Loss Equation).

2. Load allocations are assigned for contaminated sites (non-point source).

TMDL Implementation

1. Implementation will be required if allocations for contaminated sites require a reduction. Currently no TMDLs have assigned a reduction to contaminated sites.