Community Engagement using the Health Impact Assessment Framework Milwaukee Estuary – Lincoln Park Area of Concern Phase II

Community Summary

Executive Summary

Beginning in 2009, the Wisconsin Bureau of Environmental and Occupational Health (BEOH) became involved in the Lincoln Park and Milwaukee River Channels Area of Concern (AOC) Sediment Remediation Project – Phase II. Phase I of the project is the area that includes Lincoln Creek and the west oxbow of the Milwaukee River. This area contains significant sediment deposits contaminated with the industrial chemicals polychlorinated biphenyls (PCBs). A team of agencies are planning the remediation project activities, including the Wisconsin Department of Natural Resources (WDNR), the Environmental Protection Agency (EPA), the Milwaukee County Parks Department, the Milwaukee Public Health Department, the North Shore Health Department and UW-Extension. BEOH joined this team to help guide the outreach and education using some of the principles of a Health Impact Assessment (HIA) to facilitate community engagement activities. Partnership development across sectors - facilitating collaboration among the EPA, DNR, and local agencies - was critical to effectively conducting these activities. This report summarizes the outreach and community engagement activities conducted within the context of the HIA framework. The HIA process includes multiple steps:

- Screening
- Scoping
- Assessing Risks and Benefits
- Reporting

These steps guided the community engagement process for the phase II remediation at Lincoln Park.

Deciding to Use the HIA Framework (Screening)

The decision to use the HIA framework was made after BEOH and project partners consulted background information to create an environmental and human health profile of the community. Resources consulted include the EPA website, the WDNR website, the Agency for Toxic Substances and Disease Registry's (ATSDR) Baseline Report of the Milwaukee 30th Street Corridor, and information about the completed Blatz Pavilion Sediment Remediation Phase I in 2008. In addition, the project partners held a Community Availability Session (open house) in November 2009 where partnering agency representatives were available to answer community questions about the project.

The purpose of the community engagement was to design better communication of technical details about the clean-up project to a lay audience while also soliciting their insight and identifying ways to incorporate community input into the process and final project outcome. Therefore, the decision was made to avoid the term 'HIA' and instead focus on the principles of community engagement and use the HIA steps as a guiding process.

Through the screening process, it was determined that the project is linked to health in multiple ways. Two intervention points were identified:

1. Community recommendations for remediation plan (logistics and final outcome/design)
2. Community recommendations for public health communication improvement and other PCB exposure reduction methods (e.g. fish advisories)

Community Engagement (Scoping)
To understand the key community concerns, project partners held the first of two community input sessions to better understand community perspective. In the first session, partners focused conversations around four topics based on recurring themes heard during the Community Availability Session: health, habitat, sediment remediation, and recreation. During the meeting, each topic was assigned a table, an expert on that topic to facilitate input, and a note-taker. The information gathered from this meeting was summarized and themes were drawn during the assessment.

Understanding Community Concerns (Assessment)
Input collected from the first community input session was compiled into a table. Common themes from the input session were identified and reported in this table. Answers to the comments and concerns were provided in a *Proposed Action* section by content experts. Topics that could not be addressed because they were outside the scope of the project were assigned additional resources or contacts for concerned citizens or community groups to reference and advocate their issues further. As mentioned, the broad representation of partners to move this project forward proved to be advantageous in being able to provide additional information and resources to help meet the community needs.

Sharing Findings with the Community (Reporting)
Three methods of reporting were established:

1. A *Community Input Summary Table* was created which outlined all of the comments from the community at the June 16, 2010, meeting, as well as written comments received by project partners after the meeting. This table included detailed responses from the project partners to each community question, concern, or idea. For issues outside of the scope of the remediation project, resources and contacts were provided.
2. A *meeting was held on July 28, 2010* to report back to the community about a) what they heard at the June 16,2010 meeting b) respond to questions and concerns using the *Community Input Summary Table* as a guide and c) to provide additional resources and avenues for input for issues outside of the scope of the project. Project partners presented information on key areas including sediment, health, habitat, and recreation. Experts and project team members were available to answer questions during a panel discussion.
3. This *summary report* containing the information gathered throughout the process, documentation of lessons learned, and implications/next steps based on the HIA process will be disseminated to project partners and the community.

How useful was the HIA framework (Monitoring)
The monitoring step will focus on the success of the engagement. The goals include:

1. Showing the community that their voices have been heard by addressing concerns and implementing community ideas where the project team has authority.
2. Providing ways for the community to actively take part in the progress towards improving their community

3. Specifying community-identified success indicators such as improved communication mechanisms with local agencies, improved education, and a reflection of community desires in the project plan, etc.

Lessons Learned

Implementation of the HIA framework in the Lincoln Park project showed that it is important to:

- *Define roles and responsibilities of partners early in the HIA process.* Several partners were involved in the improvement of Lincoln Park and the waterway. In order for all partners to be dedicated to the improvement in community involvement, clarification of what each partner can and is willing to provide is key. Defining expectations among partners and fitting them into the overall plan can ensure objectives are met.

- *Appoint meeting facilitators and other leadership roles in order to streamline communication processes and planning.* Several partner meetings were necessary throughout the process and each meeting was time sensitive.

- *Allot adequate time to identify resources and clarify intended audience.* By allowing adequate time for Screening and Scoping, you will more effectively shape the HIA activities and timeline. Realistic timelines should remain flexible, and revisited at each step of the process.

- *Use liaisons to increase known underrepresented populations.* As the process for Lincoln Park evolved, it was clear that communities participating in the input sessions were not nearly representative of all populations affected by the discussions. Community centered liaisons and trusted community members should be sought to lead or guide engagement efforts.

Overall, the community expressed that communication strategies need to be strengthened – project partners need to establish clear channels of communication through which community members can express their concerns and be updated on project details. Many misconceptions about the project goals, logistics, and related health risks emerged during community meetings and through public comments. Many of these concerns could have been mitigated had community members been made aware of existing communication venues to ask questions and share concerns.

Challenges

Overall, keeping local residents and affected parties engaged and heard, while still receiving technical support from the State can be difficult. It is complicated to plan outreach and communication strategies in response to community needs when operating under the confines of various agency public relations restrictions. To remain true to the HIA process it is essential that the community drives the process. This can be challenging when funding streams dictate project partners, activities and timelines.

Table of Contents

Introduction

Beginning in 2009, the Wisconsin Bureau of Environmental and Occupational Health (BEOH) became involved in the Lincoln Park and Milwaukee River Channels Area of Concern (AOC) Sediment Remediation Project – Phase I. Phase I of the project is the area that includes Lincoln Creek and the west oxbow of the Milwaukee River (shown in blue in below map). This area contains significant sediment deposits contaminated with the industrial chemicals polychlorinated biphenyls (PCBs). Sediment remediation involves removal of the contaminated sediment from the riverbed and restoring these areas to an environmentally and ecologically stable state.

Map of Phased Sediment Remediation Projects in Lincoln Park area.

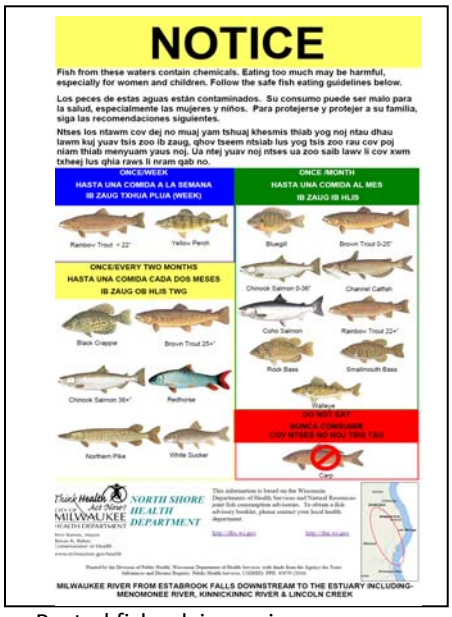
Courtesy of DNR: http://dnr.wi.gov/org/water/greatlakes/legacy/lincolnpark.htm

High levels of polychlorinated biphenyls (PCBs) were identified in waterways in this area. PCB's are man-made chemicals commonly used in manufacturing processes and industry as coolants in electrical equipment, metal-cutting oils, microscope lens oils, and in inks, dyes, and carbonless copy paper ("What are PCB's" retrieved February 1, 2011 from http://dnr.wi.gov/org/water/wm/foxriver/whatarepcbs.html).

Health concerns

PCBs break down very slowly and can be carried long distances in the air, in rivers, lakes and oceans. PCBs can build up over time in the fat of people and animals. Recent studies found that most people have traces of PCBs in their body fat. PCBs can build-up in the food chain. For example, fish can have PCB levels in their fatty tissues that are much higher than the surrounding water. In general, a person should take steps to limit exposure sources to PCBs in the environment when possible. Park and river users in the Lincoln Park area should prevent direct contact with the sediment in the marked areas and follow the posted fish advisories.

Posted sediment warning sign



Posted fish advisory sign

Health officials do not expect people to become ill through brief exposures to the sediments and fish, however, it is best to limit overall exposure to PCBs due to the fact that all exposures over a lifetime from different sources contribute to a person's health. The people at highest risk, or most sensitive populations, include women of childbearing age, pregnant women, and children. The following health effects can occur after several years of exposure to PCBs:

- **Cancer:** PCBs cause liver cancer in laboratory animals and may cause cancer in humans.
- **Reproductive Effects:** Some limited animal and human studies suggest PCBs can effect reproduction and the development of unborn babies. Researchers have noted learning and memory problems in some children who were exposed to PCBs before birth.
- **Immunity:** Animal studies show the immune system can be affected by PCBs.
- **Organ Systems:** PCB exposure can cause liver damage.

In general, chemicals affect the same organ systems in all people who are exposed. However, the seriousness of the effects may vary from person to person.

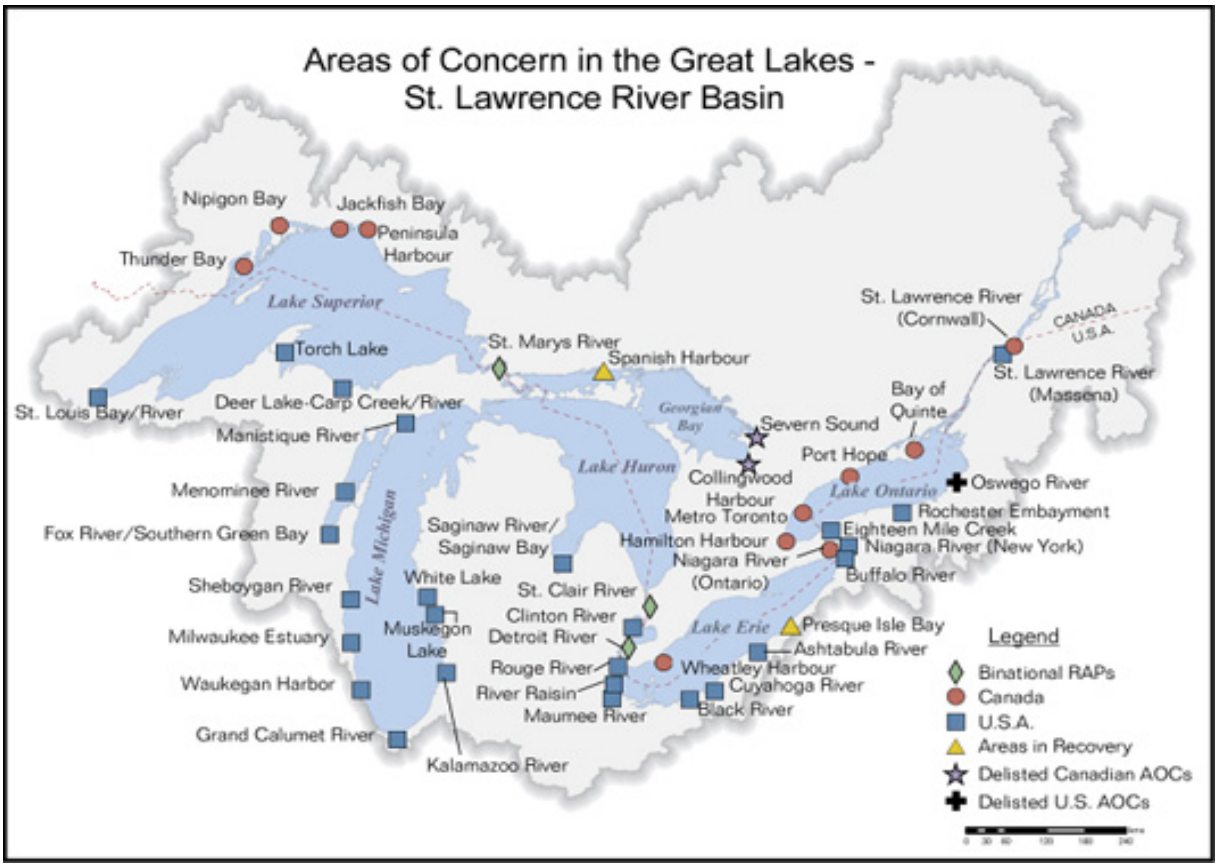
Each person's reaction depends on several things, including individual health, heredity, previous exposure to chemicals including medicines, and personal habits such as smoking or drinking.

It is also important to consider the length of exposure to the chemical; the amount of chemical exposure; and whether the chemical was inhaled, touched, or eaten. (Taken from WI DHS PCB fact sheet: http://www.dhs.wisconsin.gov/eh/ChemFS/fs/PCB.htm).

Funding and Partners

The remediation project, or clean-up, is funded by the Great Lakes Legacy Act, by which EPA covers 65% of costs and the State of Wisconsin DNR 35% of costs. The clean-up will remove most of the PCB's from the riverbed known as Lincoln Creek. A team of agencies are planning the remediation project activities, including the Wisconsin Department of Natural Resources (WDNR), the Environmental Protection Agency (EPA), Great Lakes National Program Office (DPT-GLNPO), the Milwaukee County Parks Department, the Milwaukee Public Health Department, the North Shore Health Department, UW-Extension, and Illinois-Indiana Sea Grant. BEOH joined this team to help guide the outreach and education using Health Impact Assessment (HIA) principles. Facilitating cooperation among the EPA, DNR, and local agencies - was critical to effectively conducting these activities. This report summarizes the outreach and community engagement activities conducted using the HIA framework.

What does the Great Lakes Legacy Act and the Area of Concern Designation Mean?



Map courtesy of EPA Great Lakes Area of Concern web page: http://www.epa.gov/glnpo/aoc/

The Great Lakes Legacy Act (the Legacy Act) was signed into law in 2002. The Act provides funding to clean up contaminated sediment in "*Areas of Concern* located wholly or partially in the United States." This funding includes money specifically designated for public outreach and research components. The U.S. Environmental Protection Agency's (USEPA) Great Lakes National Program Office (GLNPO) was designated to implement the Legacy Act.

The U.S. and Canadian governments jointly identified 43 *Areas of Concern* (AOCs) in the Great Lakes where the full use of natural resources has been impaired because of several factors, including chemical contamination. One of these AOC's is the Milwaukee River Estuary. The Milwaukee River Basin is located in the most densely populated area of Wisconsin, encompassing portions of seven counties and is home to about 1.3 million people (DNR, 1996). There are several upstream areas of the Milwaukee River Estuary included in the AOC, including Lincoln Park, located at the confluence of Lincoln Creek and an impoundment of the Milwaukee River. The Lincoln Park/Milwaukee River channel area contains the most significant deposits of polychlorinated biphenyls (PCBs) known within the Milwaukee River system and has been designated a Great Lakes Legacy Site.

Community Involvement Process Guided by HIA Model

The Health Impact Assessment (HIA) process offers an ideal format for communities to ensure that public health is incorporated into key conversations and decisions related to the clean-up, use, and redevelopment of contaminated lands and waterways. HIA is a rapidly emerging, powerful tool for developing healthy public policy with input from community members.

HIA can be used to evaluate without bias the potential health effects of a project or policy before it is built or implemented. It can provide recommendations to increase positive health outcomes (such as decrease in obesity, lower asthma rates, reduced injury, increased recreational opportunities, etc.) and minimize undesirable health outcomes. A major benefit of the HIA process is that it brings public health issues to the attention of persons who make decisions about areas that fall outside of traditional public health arenas, such as transportation or land use. This benefit is clearly highlighted in the HIA process implemented on the Lincoln Park remediation project. While the remediation project focus is on cleaning up PCB's from the river, the broad scope of partnering agencies involved gave community members an opportunity to be heard and share their concerns over several issues related to the waterway and park. Key public health related issues mentioned to project managers through emails and community input sessions include: desire for a more navigable waterway to increase recreation, an interest in improving habitat for fish and fishing, expand or improve trails in Lincoln Park, and overall concern about preventing exposure to PCB's during clean-up and use of Lincoln Park.

The HIA process includes multiple steps:

- Screening
- Scoping
- Assessing Risks and Benefits
- Reporting

These steps guided the community engagement process for the phase II remediation at Lincoln Park.

Deciding to Use the HIA Framework (Screening)

The screening process is used to decide whether an HIA will add value to the project. Some of the essential tasks in screening include: defining the decision and alternatives, deciding who will be involved, determining if those involved in the project are ready to work on a HIA, evaluating the project based on screening criteria, making a decision about whether to conduct a HIA, and notifying participants of your decision.

The Milwaukee AOC project was 'screened' by BEOH and project partners in spring of 2010. Project partners understood from public meetings and personal contacts that local citizens wanted to be better informed about the details of the project, and some were extremely vocal

about their concerns on certain aspects of the remediation plan. An issue of particular contention was the status of the Estabrook Dam, an impoundment on Lincoln Creek which is currently in disrepair. At the time screening began, the Milwaukee County Parks Department was in the process of deciding whether to repair or to remove the dam, which regulates the water flow in the Lincoln Creek area. To provide technical assistance to project partners and the community on the remediation project, BEOH used the HIA framework to engage citizens, understand their concerns, and to help democratize decisions associated with the clean-up of the area, particularly decisions pertaining to public health.

The decision to use the HIA framework (screening) was made after BEOH and project partners consulted background information to create an environmental and human health profile of the community. Resources that were consulted include the EPA website, the WDNR website, the Agency for Toxic Substances and Disease Registry's (ATSDR) Baseline Report of the Milwaukee 30th Street Corridor, and information about recently completed Lincoln Park Sediment Remediation Phase I. In addition, the project partners held a Community Availability Session (open house) in November 2009. Partnering agency representatives were available to answer community questions about the project.

The screening process showed that the project is linked to health in multiple ways. Two main points were identified:

1. Community recommendations for remediation plan (logistics and final outcome/design)
2. Community recommendations for public health communication improvement and other PCB exposure reduction methods (e.g. fish advisories)

The partners determined that the HIA framework would be useful as a guide for *systematically gathering more community input* to understand perceived health impacts of the remediation and to identify features the community would like to see included in the remediation process and resulting changes to the area. Since the HIA was used to provide partnering agencies a framework for engaging the Lincoln Park community, the term 'HIA' was not explicitly used in the dialogue with community members. The ATSDR Action Model was mentioned as a guide in the first community meeting, though just briefly explained. Technical terminology about these frameworks was avoided intentionally, as the remediation project in itself entailed numerous technical steps and scientific language that needed to be translated to establish a broad, clear community understanding. The purpose of the community engagement was to design better communication of technical details about the clean-up project to a lay audience while also soliciting their insight and identifying ways to incorporate community input into the process and final project outcome. Therefore, the decision was made to avoid the term 'HIA' and instead focus on the principles of community engagement and use the HIA steps as a guiding process.

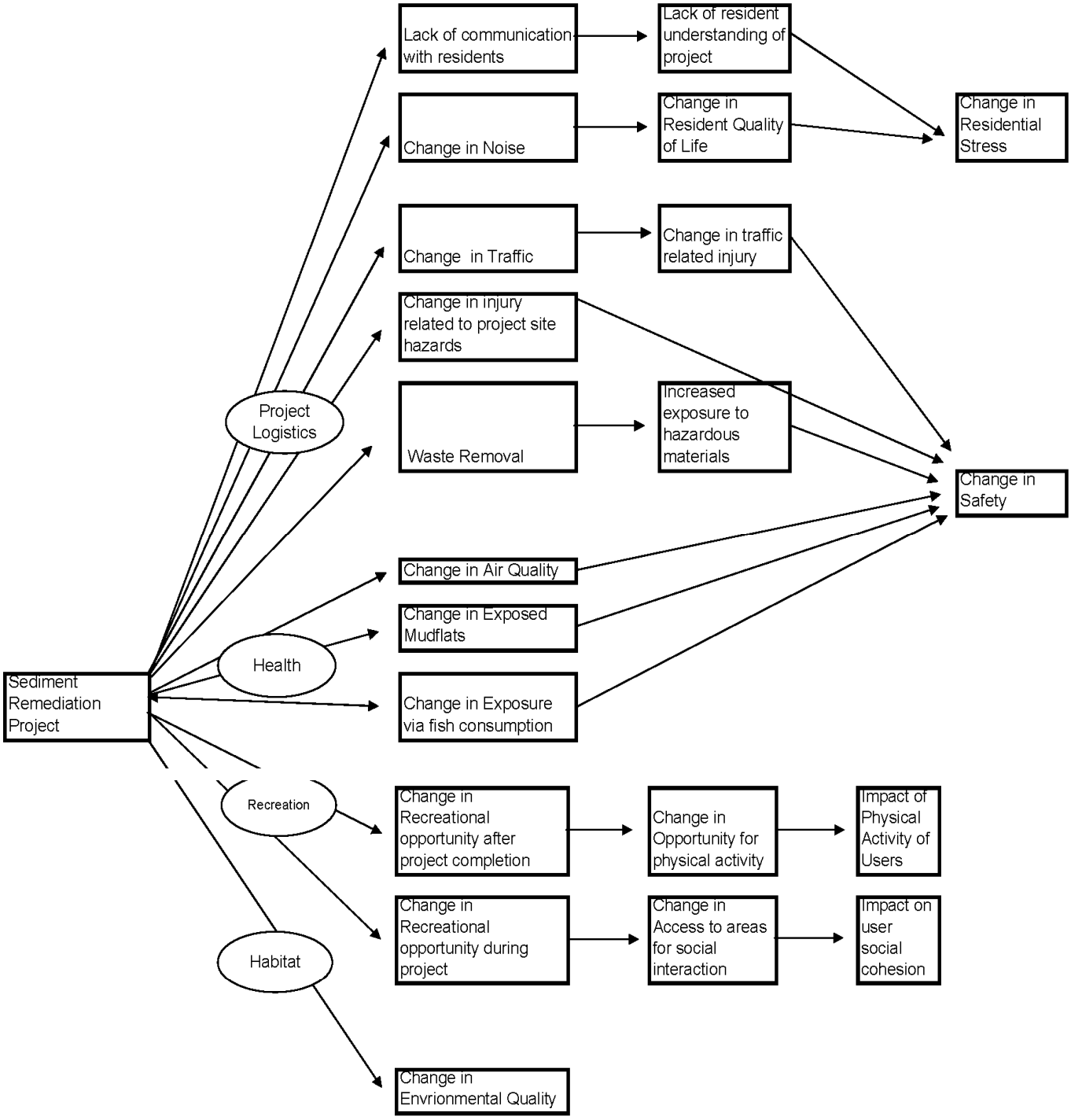
Community Engagement (Scoping)

Scoping involves examining what the projects' health impacts will be on the community and how those impacts will be studied. During this phase of HIA it is necessary to listen to

community concerns and ideas in order to conduct an assessment that is community-specific. However, the HIA process does not provide a specific strategy for community outreach. For this reason, the group utilized the ATSDR Action Model to guide this particular HIA step. The action model provides a specific guide to assist with community conversations and to gather concerns and empower the public to be in charge of envisioning what they would like to see happen based on the resources available to them. The future status of the Estabrook Dam was at the forefront of every conversation and often acted as a distraction from discussion on the public's overall vision for the park. The goal of the community engagement was to foster conversation about what citizens were concerned about as the clean-up was happening, and encourage community members to inform agencies of what they would like to see happen to the Lincoln Park area in the future. The conversations often fell outside of the scope of what project members could accomplish, i.e. resolving the status of the Estabrook Dam, however, there was still great value in providing the community the opportunity to be heard. It is our hope that this report and included recommendations will serve as a tool for future projects and community groups to use in getting their issues recognized.

During the community engagement, project partners held the first of two community input sessions to better understand community concerns. In the first session, partners focused conversations around four topics that covered recurring themes heard from the community during the Community Availability Session. The four topics included health, habitat, sediment remediation, and recreation. During the meeting, each topic was assigned a table, an expert on that topic to facilitate input and a note-taker.

The following pathway diagram was created based on the community concerns gathered during the community engagement activities.


Sediment Remediation Project
Project Logistics
Health
Recreation
Habitat
Lack of communication with residents
Lack of resident understanding of project
Change in Noise
Change in Resident Quality of Life
Change in Residential Stress
Change in Traffic
Change in traffic related injury
Change in injury related to project site hazards
Waste Removal
Increased exposure to hazardous materials
Change in Safety
Change in Air Quality
Change in Exposed Mudflats
Change in Exposure via fish consumption
Change in Recreational opportunity after project completion
Change in Opportunity for physical activity
Impact of Physical Activity of Users
Change in Recreational opportunity during project
Change in Access to areas for social interaction
Impact on user social cohesion
Change in Envrionmental Quality

Understanding Community Concerns (Assessment)

In a formal HIA, the assessment step include understanding and creating a profile of the existing conditions and collecting data to develop projections of the potential negative and positive health impacts of the project.

During this phase we strayed away from the formal HIA definition of assessment, and instead used the formal environmental and health assessments created by the EPA and Wisconsin Department of Health Services. The health assessment document released by the State Department of Health Services is found in Appendix II. Agency group members decided that for the purposes of this part of the project, the assessment of existing conditions should be based mostly on community input. We wanted to understand the perceived health concerns that community members had related to the sediment remediation project. Many of the concerns were new to project members and therefore could be mitigated; others were misunderstandings and were taken care of with educational materials and clarification from content experts.

To conduct our 'assessment', the following activities took place:

1. Compiling data/community input collected at the first community input meeting
2. Identifying themes from community input
3. Identifying answers to community questions and ways to shape the remediation process through incorporation of feedback
4. Identifying resources for concerns and ideas outside the scope of the Great Lakes Legacy Act project

Information collected from the first community input session was compiled into a table titled "Community Input Summary Table" (see Appendix I). Common themes from the input session were identified and reported in this table. Answers to the comments and concerns were provided in the *Proposed Action* section and were developed by content experts. Topics that could not be addressed because they were outside the scope of the project were assigned additional resources or contacts for concerned citizens or community groups to reference and advocate their issues further. As mentioned, the broad representation of partners to move this project forward proved to be advantageous in being able to provide additional information and resources to help meet the community needs.

Sharing Findings with the Community (Reporting)

Recommendations were developed based on the findings reported in the *Community Input Summary Table* and are detailed below.

The recommendations and findings from this project will be shared in three different ways.

1. A *Community Input Summary Table* outlines all of the comments from the community at the June 16, 2010, meeting, as well as written comments received by project partners after the meeting. This table included detailed responses from the project partners to each community question, concern, or idea. For issues outside of the scope of the remediation project, resources and contacts were provided.
2. A *public meeting was held on July 28, 2010* to report back to the community about
    a) What they heard at the June 16, 2010 meeting
    b) Respond to questions and concerns using the *Community Input Summary Table* as a guide and
    c) Provide additional resources and avenues for input for issues outside of the scope of the project.

    Project partners presented information on key areas including sediment, health, habitat, and recreation. Experts and project team members were available to answer questions during a panel discussion.
4. This *Community Summary Report* will be shared with project partners and the community.

Recommendations & Mitigation Strategies Based on Community Input

Recommendations were derived through thematic review of notes from community input sessions. Prior to formalizing recommendations, the community should be consulted to review and confirm that the recommendations reflect community desires.

Overarching Recommendation

Overall, the community expressed that communication strategies need to be strengthened – project partners need to establish clear channels of communication through which community members can express their concerns and be updated on project details. Many misconceptions about the project goals, logistics, and related health risks emerged during community meetings and through public comments. Many of these concerns could have been mitigated had community members been made aware of existing communication venues to ask questions and share concerns.

Result

Based on these concerns, the agencies created an outreach team to formulate short and long-term communication outlets for the community. The agencies made several contact numbers and emails for key staff available via the internet and at public meetings. The DNR and BEOH created web pages specifically for the Lincoln Park project which contain a number of outreach materials related to future plans, meetings, and health related issues. Agencies plan to hold several meetings pre, post, and during clean-up for the community to stay informed. Kiosks will be made available in the parks with up-to-date public information about health and safety and project activities.

Health Recommendations

1. Improve outreach plans to target those most at risk of PCB exposure in Lincoln Park.
    a. Identify who is consuming fish from the park and tailor messages.
    b. Provide better outreach to mitigate PCB exposure *before* and *during* the remediation.
    c. Improve signage, for example, through making larger fish signs and making signs more culturally relevant to park users.
2. Provide outreach information about pet exposure.
3. Provide outreach and education for parents and children and consider using the schools as a venue for outreach.
4. Consider mass mailings as a way to communicate information about the clean-up project and related health risks.
5. Provide more information about the health risks of PCB exposure (i.e. associated health outcomes).
6. Consider water quality concerns related to outside events, such as heavy rains and other sources of pollutants (e.g. agricultural run-off).

Sediment Recommendations

1. Better communicate details of project logistics to the public. Information requested includes:
    a. Project timeline
    b. Where sediments will be disposed
    c. Status of PCB contamination in sediments during and after remediation
    d. How the area will be de-watered
    e. How the sediment remediation will work in tandem with the Estabrook Dam project
    f. Identify truck routes and ensure they will not damage roadways
2. Expedite the clean-up process as much as possible.
3. Monitor PCB movement downstream.
4. Monitor and enforce safety processes during remediation.
5. Create a deeper channel for recreational purposes (e.g. paddling, fishing).
6. Limit erosion.
7. Minimize use of riprap.
8. Protect existing properties, roads, and infrastructure.
9. Remove broken cement.

Habitat Recommendations

1. Increase fish species and shallow pools for fish raising young.
2. Create deep pools or wetlands to manage flood waters.
3. Limit stagnant water, weeds, and mosquitoes and potential related health risks.
4. Protect habitats for bald eagles and herons.
5. Make the island a wildlife refuge.
6. Create a buffer between the golf course and the park.
7. Remove invasive species and plant a diverse range of native species.

8. Limit clear cutting and protect existing trees.
9. Consider the entire watershed in the design and logistics of clean-up.

Recreation Recommendations

1. Provide recreational opportunities for children after the project.
2. Create a beach for park users.
3. Create deeper water channels to facilitate paddling.
4. Provide dams or levies during remediation to allow recreation.
5. Move the pier to a better location and improve fishing opportunities.
6. Provide boat rentals and a canoe/kayak launch.
7. Consider creating new trails.
8. Enhance bird watching opportunities.
9. Improve tourism opportunities.
10. Increase use of the river.

How Useful was the HIA Framework (Monitoring)

Monitoring is done to better understand if the HIA was effective. The purpose of using HIA principles at Lincoln Park was to improve communication of the clean-up project to a lay audience, and to incorporate community input into decisions made about the project. Future monitoring will focus on the success of the community engagement. The goals of monitoring include:

1. Showing the community that their voices have been heard by addressing concerns and implementing community ideas where the project team has authority.
2. Providing ways for the community to actively take part in the progress towards improving their community
3. Specifying community-identified success indicators such as improved communication mechanisms with local agencies, improved education, a reflection of community desires in the project plan, etc.

These goals will be addressed through the development of an overall community outreach planning team. To date, brainstormed ideas for outreach include increased community meetings, website updates, email, mailings to schools, dissemination of timely information regarding the project and a kiosk for the park that will display project and health-related information. A specific piece to the overall outreach plan will be a health communication plan that will be shaped based on feedback from the two community input meetings conducted during this HIA. The outreach plan will also focus on establishing a reliable way for community members to continue to share their concerns regarding the project and health.

Although a number of the goals have yet to be accomplished, the community engagement process using the HIA framework was successful in guiding this project. Valuable information was gathered that will surely shape the course of the sediment remediation project, communication and outreach initiatives moving forward.

These monitoring and evaluation components were developed based on the community feedback received at both June and July meetings. The community provided ideas for populations to target with public health communications and ways to tailor messaging to make it more effective.

Lessons Learned

Implementation of the HIA framework in the Lincoln Park project showed that it is important to define roles and responsibilities of partners early in the HIA process. As mentioned previously, there were several agencies and partners involved in the improvement of Lincoln Park and the waterway. In order for all partners to be dedicated to the improvement in community involvement, clarification of what each partner can and is willing to provide and how that will fit into the overall plan is key. Furthermore, defining expectations among partners can ensure that objectives are met.

Several partner meetings were necessary throughout the process and each meeting was time sensitive. Appointing meeting facilitators and other leadership roles can streamline communication processes and planning.

To clearly identify the scope of the potential HIA and available resources, as well as to clarify the intended audience and intervention points the Screening and Scoping Phases should be allotted adequate time. Doing so will more effectively shape the HIA activities and timeline. Realistic timelines should remain flexible, and revisited at each step of the process.

When projects become technical, it is valuable to have an outreach liaison to ensure messages are understandable and relevant to the community. As the process for Lincoln Park evolved, it was clear that communities participating in the community input sessions were not nearly representative of all populations affected by the discussions. A strategy to increase known underrepresented populations are community-centered liaison(s) or identified trusted community members that are willing to lead or guide community engagement efforts.

Challenges

Overall, keeping strong local involvement while receiving technical guidance and funding from the State can be difficult. It is complicated to plan outreach and communication strategies in response to community needs when operating under the confines of various agency public relations restrictions. To remain true to the HIA process it is essential that the community drives the process. This can be challenging when funding streams dictate project partners, activities, and timelines.

Project Contacts

Sediment Remediation Project
Lincoln Park Sediment Projects Contacts

Ajit Vaidya, *Project Co-Lead*
U.S. Environmental Protection Agency
312-353-5713
vaidya.ajit@epa.gov

Brenda Jones, *Project Co-Lead*
U.S. Environmental Protection Agency
Great Lakes National Program Office
312-886-7188
Jones.brenda@epa.gov

Marsha Burzynski, *Project Manager*
Wisconsin Department of Natural Resources
414-263-8708
Marsha.burzynski@wisconsin.gov

Bill Fitzpatrick, *Project Engineer*
Wisconsin Department of Natural Resources
608 266-9267
William.Fitzpatrick@wisconsin.gov

Kevin Haley, *Landscape Architect*
Milwaukee County Parks
414 257-6242
Kevin.haley@milwcnty.com

Health

Robert Thiboldeaux, *Toxicologist*
Wisconsin Department of Health Services
608-267-6844
Robert.thiboldeaux@wi.gov

Local Health Departments

Terri Linder, *Environmental Disease Control Specialist*
City of Milwaukee Health Department
414-286-5789
tlinde@milwaukee.gov

Ann Brandstrom, *RN., BSN*
North Shore Health Department
414-371-2980
abrandstrom@browndeerwi.org

Outreach

Susan Boehme, *Coastal Sediment Specialist*
Illinois-Indiana Sea Grant
UIUC Extension
Liaison to the U.S. EPA Great Lakes National Program Office
312-353-4383
Boehme.susan@epamail.epa.gov

Gail Epping-Overholt, *Natural Resources Educator*
UW- Extension
414-256-4632
Gail.overholt@ces.uwex.edu

Jessica Maloney, *Public Health Educator*
Wisconsin Department of Health Services
608-267-7199
Jessica.maloney@wi.gov

Appendix I

Community Input Summary Table

Summary Table of June 16, 2010 Community Input Meeting

On June 16, 2010, we heard and recorded your ideas, thoughts, and concerns related to the sediment remediation project in Lincoln Park. This table provides a summary of the themes we found in the community comments that were collected. Below, you will find a list of these themes, detailed comments, and whether or not these issues have the potential to be addressed by the sediment remediation project.

If we are unable to address the particular concern or idea, we have listed, in the last column, resources, decision-makers, and key contact people in order to provide avenues for addressing this issue. We welcome your feedback.

Overall Themes:

1. Look upstream and downstream at potential effects on the whole watershed
2. Timeline & Project Logistics – can the timeline be expedited? What are the details of the disposal process?
3. PCB exposure & health
4. Communication plan needed
5. Water depth
6. Protect and restore habitats – wildlife, vegetation
7. Value recreational desires

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
HEALTH	Anglers, Fish Consumption, Health concerns & timeline	1. Will public health agencies identify who is eating the fish, and why?	1. Due to limited funding, agencies will have to rely on current studies that estimate PCB exposure among fish consumers. Funding opportunities will be explored and will focus on surveying and educating subsistence anglers in the area.	Please refer to http://dhs.wisconsin.gov/eh/WISites/LincolnPark/index.htm for more information on PCBs.
		2. Will PCBs in fish decrease after Lincoln Creek is cleaned up? Will Fish consumption advisories ever be lifted?	2. Fish quality is monitored routinely by the DNR. Fish advisories will be updated to reflect changes. It is likely that the fish quality will improve over time.	Please refer to http://dhs.wisconsin.gov/eh/WISites/LincolnPark/index.htm for more information on PCBs.
	Pet safety	3. I am concerned about my dog when it swims or wades in Lincoln Creek. How can I protect my	3. As with humans, contact with sediment is a minor source of exposure to PCBs in Lincoln Park. This source of exposure can be avoided by preventing your pet from swimming in the marked areas. If they come in contact	Direct questions about PCBs to DHS toxicologist or to local public health officials.

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		pet?	with river sediment, give them a bath when they get home. As a general rule, when your pet swims in a natural water body we recommend you give your pet a bath with soap and water afterwards.	
	Child health considerations	4. Is there a health concern for residents and park users who walk on exposed flats?	4. There will be communication through kiosks and warning signs. Additionally, once the contaminated sediment is removed after the clean up project, it will be safe to walk on these areas. For the time being: a. The main source of exposure to PCBs is consumption of contaminated fish. b. A minor source of exposure is contact with contaminated sediment. c. As a precaution, wash hands before eating after contact with the sediment/exposed mudflats.	Please refer to http://dhs.wisconsin.gov/eh/WISites/LincolnPark/index.htm for more information on PCBs.
		5. Will area children be tested for PCBs or other contaminants?	5. No testing of the public around Lincoln Park for PCB exposure is planned because: a. We already know that the fish are contaminated with PCBs. Preventing consumption of these fish through education is our best public health strategy. b. We have many sources of PCB exposure from our environment which build up in our bodies a little at a time. It is not usually possible to trace PCBs in our body to a specific source. c. There is no medical treatment for the amount of PCBs to which people are usually exposed.	Studies that estimate PCB exposure among fish consumers may aid in providing education to specific communities around the Milwaukee River. Please refer to http://dhs.wisconsin.gov/eh/WISites/LincolnPark/index.htm for more information on PCBs.
		6. What education and outreach will there be for parents, children, and park users?	6. A more extensive outreach plan is currently being developed and we hope to reach park users through community groups and schools and they will be included in our long term communication plan.	Contact your local or the state health department if you would like to be more involved in education efforts.

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		7. When children are fishing Lincoln Creek will public health agencies educate them about the contamination and stop them from fishing?	7. The public can not be prevented from legally catching fish. But, Public Health has a large role in educating the public on this issue. Children and adults can still fish, but are advised to follow the fish signs posted along Lincoln Park.	Contact your local or the state health department if you would like to be more involved in education efforts.
	PCBs & health	8. When mudflats are uncovered will PCBs become airborne and increase our exposures?	8. No. The area around Lincoln Park has been studied to determine if PCBs from Lincoln Creek mudflats affect air quality (reference in column to right). The study found that PCBs in air around Lincoln Park are similar to that found elsewhere in Milwaukee and are well under Wisc. Ambient Air Standards for PCBs. a. The main source of exposure to PCBs is consumption of contaminated fish. b. A minor source of exposure is contact with contaminated sediment. c. As a precaution, wash hands before eating after contact with the sediment/exposed mudflats.	See: - *http://dnr.wi.gov/air/pdf/MilwPCBsFinal.pdf* www.legis.state.wi.us/rsb/code/nr/nr445.pdf ▪ Refer to WDHS health assessment document for PCB exposure: http://www.dhs.wisconsin.gov/eh/WISites/LincolnPark/LincolnCreekHC.pdf ▪ Direct sediment disposal questions to WDNR or US EPA site managers. ▪ Direct questions about PCBs to DHS toxicologist, or to WDNR or US EPA site managers
		9. Is PCB exposure risk different for other portions of Lincoln Creek?	9. An assessment is underway that compares risk from exposure to PCBs from different areas. We also have poster showing 'hot spots' in the park.	
		10. Once PCB-contaminated sediments are removed, will they be safely disposed?	10. Sediment experts will explain the disposal process further. Refer to page 11, #31-#35.	
		11. Is PCB contamination in Lincoln Creek getting worse?	11. No. The PCBs found in Lincoln Park sediments have not been manufactured for many years, and are not widely used as they once were. Although the PCBs	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
			break down very slowly, environmental agencies are working to safely remove PCBs where they are found in the Milwaukee River and its tributaries.	
		12. During the cleanup should the mudflats be covered with water to prevent unsafe PCB exposures?	12. See answer in number 8 under the Health Table.	
	Other contaminants in Lincoln Creek	13. What are the health risks from other contaminants in Lincoln Creek?	13. It is not unusual to find many types of contaminants in urban streams. Increased health risk occurs when one or more of these impurities become concentrated in the water or sediment of the steam so that the waterway is not suitable for fishing, swimming, or the health of wildlife. In Lincoln Park, PCBs are the contaminants identified to pose risk. Removal of sediment containing PCBs will also remove other associated contaminants. EPA 's contractor is currently studying the sediments in the phase II area. Samples are being analyzed for heavy metals, PAHs, pesticides and PCBs. Results will be reported once all data are received and validated.	Phase II sampling report to be completed by CH2M Hill under contract with US EPA.
		14. What can be done to stop Lincoln Creek from being contaminated by: -Lawn chemicals -agricultural run-off -nitrogen -fertilizers -E.coli bacteria	14. Runoff from urban lawns and agricultural fields have important impacts on waterways in Wisconsin, including the Milwaukee River watershed. There are many ways to prevent runoff, but these are outside of the scope and authority of the current PCB removal project. The Wisconsin Administrative Code Chapter NR 151 , http://dnr.wi.gov/runoff/rules/ sets performance standards for controlling runoff from agricultural and urban areas.	▪ Local ordinances determine use of chemicals on lawns. Work with your alderperson. ▪ There are specific programs within the WDNR and the Wisconsin Dept. Agriculture, Trade, and Consumer Protection that can assist with runoff issues. ▪ See http://dnr.wi.gov/runoff/ for more information

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		15. Where can I go for information on health risks of PCB's?	15. The ATSDR website is a good general resource: http://www.atsdr.cdc.gov/	▪ Other more technical resources: "Spatial Distribution of Airborne PCB's in Milwaukee" www.*dnr.wi.gov/air/pdf/MilwPCBsFinal.pdf* "Protocol for a Uniform Great Lakes Sport Caught Fish Advisory: http://www.dhs.wisconsin.gov/eh/Fish/index.htm ▪ ATSDR Health Consultation: http://www.dhs.wisconsin.gov/eh/WISites/LincolnPark/index.htm
	Communication needs	15. We need better outreach to parents and schools.	15. Long-term outreach plan will include communication with schools. In addition, kiosks and websites will be updated to share information about the project.	▪ Contact the Wisconsin Dept. Health Services or your local health department for more information.
		16. Mass mailings would be useful to reach many people.	16. We are working to expand our communication techniques which will include some mailings and welcome feedback on how to improve communication and outreach for at-risk groups.	▪ Contact your local health department or the WI Dept. of Health Services to suggest ways to reach at-risk groups.
		17. Better signage is needed to inform park users. Signs have language barriers.	17. Fish advisory signs are multilingual. If additional translations are needed, DHS can offer these. We welcome feedback on how to improve signage and reach at-risk groups.	▪ Contact your local health department or the WI Dept. of Health Services to suggest translation or signage needs.
	Water quality	18. I am concerned about water runoff and raw sewage emptying into Lincoln Creek during heavy rains. What can be done to stop this?	18. After heavy rains there may be sewage overflows. Milwaukee Metropolitan Sewer District (MMSD) has announcements on news stations. ▪ Avoid contact after storm events or wash with soap and water ▪ See "*Health Effects from Other Contaminants"* section above.	▪ Local ordinances and agencies such as the Public Works Department and Milwaukee Metro Sewer have authority over storm sewer runoff. Depending on the type of sewer, if it's combined sewer, MMSD is responsible party, if storm only, county and/or municipality is

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
				regulated under Ch. NR 216, WI Administrative Code. See http://v3.mmsd.com/dnr.wi.gov/runoff/stormwater.htm ▪ Overflow advisories are handled by Milwaukee Metro Sewer. 414-225-2077 ▪ Glendale Department of Public Works discharges storm water but not raw sewage into the river
Table HABITAT	**Meeting Themes - Topics we heard you bring up at our June meeting**	**Community Questions and Concerns**	**Response - Proposed Action**	Project technical team in consultation with DNR Fisheries Staff. Habitat funding through GLRI
	Aquatic species Water depth	1. Increase fish species	1. We are interested in incorporating some in-stream habitat improvement measures into the project in the future, but state funding limitations will require seeking a funding source other than Legacy Act After project completion project partners will identify other potential funding sources.	
		2. Concern over stagnant water, disease , weeds, mosquitoes	2. The goal of the project is to remove the risk of PCBs, as part of the project we will try to improve the aquatic habitat to the extent it can be done under the rules of the funding program. Therefore to the extent practicable we will be providing a variety of water depths and habitat in the removal area. The design will try to increase water flow and reduce stagnant waters conditions.	
		3. Ice issues	3. The sediment remediation project will not prevent ice jams that currently happen such as near bridges, outlet pipes, etc.	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		4. Want shallow pools for fish raising young	4. Long term goals will be to create habitat to promote spawning of Northern Pike (shallow, calm water in the spring) as well as pools in the channel, but project partners must seek alternate funding sources due to limitations with state funding.	
		5. Want deep pools or wetlands for flood waters	5. Deep water areas are being considered for areas of the oxbow to provide adult habitat for Northern Pike and Smallmouth Bass during low water conditions.	
	Birds – habitat protection	6. Can we restore the area to its historical state?	6. Lincoln Creek will be designed to convey current flows, both low and flood, as well as provide habitat for aquatic species. However, the Milwaukee River was dramatically changed in the 1930s and we will not be able to return the river to the state it was prior to its modification.	
	Birds – habitat protection Need better buffer zones between public spaces and preserved spaces	7. Bald eagles, herons, owls	7. , Great Lakes Legacy Act addresses aquatic habitat only. Side benefit may be increased food for fish eating birds (eagle and herons).	
		8. Impact of cars driving on islands?	8. The islandin the east oxbow will not be disturbed.	Contact Milwaukee County Parks for volunteer group opportunities.
		9. Make island a wildlife refuge	9. The island will not be disturbed during this project. The County could assist in development of designated wildlife areas within the park	This information will be given to county parks to consider for future park improvements.
	Plants/vegetation Plants/vegetation	10. Buffer between golf course and park	10. This is outside the scope of the current project. Overall, the goal is sediment remediation and restoration of areas disturbed as a result; specific preserves will not be developed.	
		11. Invasive species control?	11. Some invasive species will be removed during dredging and subsequent streambank stabilization.. All new planted vegetation will be native.	
		12. Diversity of vegetation and native	12. New planting will be native and diversity will be a goal of plant selection. Native plantings will be used in	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		plants desired	all restoration efforts with the exception of the mowed areas that will be disturbed (soccer fields, etc)	
	Dredging	13. Clear cutting, tree protection	13. Cutting of trees will be minimized as much as possible. We will work with County Parks to ensure valuable trees are protected.	
		15. Consider the whole watershed, up- and downstream	15. The habitat restoration activities that will take place as part of the Phase I project will consider the overall desired vision of the watershed. Transport of contaminated sediment to downstream areas will be greatly reduced as a result of this project.	
SEDIMENT	Contamination in other areas	1. Are there areas of contamination West of Green Bay Ave?	1. No, the Phase I project area begins at Green Bay Ave. and extends east. Previous sediment samples obtained have not shown the area west of Green Bay Avenue to be contaminated with PCB's. No sources of contamination upstream of Green Bay Avenue are known.	
		2. Will the fixed crest spillway be considered for PCB removal?	2. The sediment behind the spillway is not part of the Phase 1 work. Ongoing site investigation will continue to evaluate the spillway sediment. As information becomes available, the State, County and EPA will continue to explore options for the spillway sediment.	
	Clean-Up project specifics	3. Is removing PCBs to 1 part per million a safe level?	3. 1 ppm is a cleanup level used at many PCB cleanup sites, including most recently at the Kinnickinnic River Legacy Act cleanup project in Milwaukee. At this level the vast majority of PCB's will be removed and the local environment can begin to heal itself through sediment redistribution, dilution from incoming sediment, and burial under new sediment deposits.	
		4. What is the cost of removing even more (to a	4. The removal of PCBs to an even lower level than 1 ppm becomes much more costly. Actual cost will	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		lower level)?	depend on the lower level used for cleanup.	
		5. What are the specifics about the Phase II area?	5. The phase II area is studying the sediments in the Milwaukee River from the railroad bridge, to the Estabrook Dam, including the east oxbow of the river.	
		6. What are the details of the project timeline?	6. It is anticipated that the Phase I area will begin remediation in Spring 2011, and continue through Spring 2012.	
		7. Can the schedule be expedited?	7. The project is already moving forward on an accelerated schedule. Project stakeholders will continue to examine ways to complete the project as quickly and efficiently as possible.	
		8. Can work occur year round?	8. Work will continue year round, as much as possible, but certain construction activities will need to be suspended during periods of freezing weather and high water conditions.	
		9. Why hasn't the project started yet?	9. Sediment cleanup projects are complex and expensive. The Blatz Lagoon was cleaned up in 2008. Since then we have worked hard to secure funding and design work to guide a safe and cost effective cleanup in the Phase 1 area, which is now in the remedial design phase. The cleanup work will begin as soon as the design work is complete, and a construction contractor is selected, most likely by Spring 2011.	
		10. How will the area be 'de-watered'?	10. Sheetpile currently used for Milwaukee River Parkway North bridge repair will be temporarily left in place to cut off flow to West Oxbow. Also, flow into Lincoln Creek will be diverted by gravity drainage pipes. The project design is based on dry ground. Occasionally, water may need to be pumped due to periodic rain events and/or floods.	
		11. Will the clean-up project require the dam	11. The current schedule for dam repair indicates that Lincoln Park cleanup will be completed well before dam	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		to be closed or opened?	repairs could be completed. As such, it is assumed that dam will be in the open position throughout the cleanup project duration. This approach will facilitate dewatering / dry excavation.	
		12. Where will you lay the pipes? In the creek bed?	12. The pipes would be staged in the creek bed, around Green Bay Ave. We may also leave some of the decision up to the construction contractors-they may have an innovative approach.	
		13. Will the project use dredging or hydraulic dredging?	13. The project is not considering mechanical or hydraulic dredging-those are wet forms. This project will use dry-excavation. It will be similar to a regular upland clean-up.	
	Monitoring	12. Will PCB levels be monitored downstream?	12. Yes. During cleanup, turbidity, suspended solids, and/or PCB concentrations in the water column will be monitored to ensure that downstream water quality impacts are minimized.	
		13. Will there be safety monitoring processes during remediation?	13. During cleanup, the remediation contractor will have an approved site health and safety plan that will be enforced by EPA and WDNR. Also, the contractor will set up exclusion zones to prevent public access to dangerous construction areas.	
		14. Has there been ongoing monitoring of remediated areas, such as the Blatz Pavilion area?	14. We have taken samples of the Blatz Lagoon immediately after the cleanup and follow-up samples a year later. Samples from the Blatz Lagoon ranged from no detect to 0.01 ppm PCBs. Monitoring and sampling of the Milwaukee River and the Lagoons has continued over the past few years to help to define the extent of contamination and help with the design work.	
	Water depth & quality	15. I have concerns about rain events & spread of PCBs.	15. The removal of the PCB contaminated sediment will eliminate the future spread of these contaminants.	
		16. Will there be an	16. The new Lincoln Creek channel may include a smaller	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
		ability to paddle?	"pilot" channel for low event with an objective to increase flow velocities. This will also allow for a slightly deeper water depth that would facilitate paddling during low flow periods.	
		17. Can remediation create a deeper channel?	17. Possibly. Deep pools are being considered for areas of the oxbow to provide adult habitat for Northern Pike and Smallmouth Bass.	
		18. Will the river be filled in?	18. Clean material may be placed into the creek and the oxbow such that during low flow events, stagnation and re-sedimentation would not occur, or for habitat creation or shoreline stabilization purposes. The Phase 1 cleanup project will not re-fill all excavated areas to existing grade, as was done at the Blatz cleanup. In long run, however, natural deposition will occur in those areas.	
	Flood control & erosion	19. Effects on erosion?	19. Restoration will be performed to minimize future erosion.	
		20. Construction should be done off-season to prevent erosion.	20. The intent is to perform as much work as possible during drier weather.	
	Reducing exposure *before* remediation	21. Is there a plan for mitigating exposure before the project starts?	21. A health advisory is in place and the site is posted to warn users of the fish consumption advisory and to avoid exposure to sediment. Advisories will be updated as needed.	
		22. Is the material collecting at the spillway a concern for PCBs?	22. The material collecting behind the spillway is contaminated with PCBs. It may be addressed either under the Phase II project, or as part of the Counties dam project, but not as part of the Phase I project. Phase II / spillway data are still being evaluated, and no decision has been made about how to proceed.	Refer to question 2: *"Will the fixed crest spillway be considered for PCB removal?"*
	Long term impacts of remediation	23. Upstream impacts – are there more sources upstream?	23. We have monitored the river and Lincoln Creek and see no significant upstream sources. There is an active PCB Superfund site on Cedar Creek but the data does	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
			not show this site to be contributing contaminants to the Milwaukee River at Lincoln Park.	
		24. Downstream impacts	24. There will be in-stream water quality monitoring to make sure that downstream water quality impacts are minimized.	
	Source of PCBs	25. Have the sources upstream of PCBs been identified? How did they get there? Are they stabilized? Will there be further investigation?	25. The potential sources of PCBs to the project area have been identified and are documented in a report by Weston Solutions under contract from EPA. The report notes that the sources were historical and are no longer in operation. The clean up area should not be recontaminated with PCBs.	See also: Question 11 in the Health Section *"Is PCB contamination getting worse?"*
		26. Can further investigation be done under current funding?	26. Funds will be used to monitor the site once clean up has occurred. Since the PCB contamination is historic and stable, no further investigation is being sought at this time for the current project area. An investigation of the Phase II area (Milwaukee River and east oxbow) has been completed by EPA contractors and is under review.	
	Erosion control, debris and infrastructure	27. Can the use of riprap be minimized?	27. Rocks and stones will be used to protect infrastructure (bridges, storm water outlets, utility crossings, etc.) Vegetation will be used to minimize the use of rock where possible in other areas.	
		28. We would like to see natural vegetation.	28. In general, natural vegetation will be used as much as possible in lieu of rock. Creek and river banks will be re-planted with native vegetation such as grasses, bushes, and trees.	
		29. We are concerned about the effects on properties, roads, infrastructure	29. Construction will not occur on private property. Temporary road closure will occur as part of the project. Current infrastructure will be worked around and preserved, as much as possible. Anticipate limited	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
			impact on roads and very minimal impact on properties. Any infrastructure that needs to be changed will be done in conjunction with property owners.	
		30. Broken up cement should be removed	30. Debris and garbage will be removed as needed along the restoration, but aging infrastructure will not be replaced, only protected. Replacement would be conducted by the owner of the infrastructure.	
	Disposal process	31. Will there be damage to roads by the trucks?	31. Marked truck routes (designed for heavier traffic) will be used minimize effects. Current reconstruction on Hampton Ave. west of the parkway will include thicker pavement for anticipated truck traffic.	
		32. What are the routes?	31. The routes have not been determined yet.	
		33. How will safety of contractors' procedures be monitored and enforced?	33. During cleanup, the remediation contractor will have an approved site health and safety plan that will be enforced by EPA and WDNR. Also, the contractor will set up exclusion zones to prevent public access to dangerous construction areas.	
		34. Where will the excavated sediments be disposed?	34. Sediments with PCB levels between 1 - 50 ppm will be taken to a licensed, commercial landfill in Wisconsin. Sediments with PCB levels greater than 50 ppm will be taken to a TSCA regulated landfill, the nearest one being in Wayne County, Michigan.	
		35. Will contaminated sediments be put back in the water?	35. No. Contaminated sediments removed from the creek/river will not be placed back in the water.	
RECREATION	Human Health Water Quality & Depth	1. Will recreational opportunities be available for kids after the project?	1. This project will clean-up the river so that it will be safe for all people to access the water's edge and use the river	This can be part of the BID/Businesses getting involved to improve community needs – trying to attract businesses that promote recreation/ children's activities. Work with Urban Ecology Center, Havenwoods

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
				Environmental Center to use the park for family programs, new forestry center.
		2. Will urban children be able to experience the natural setting of the river with the use of water sports/activities?	**2.** Tourism and Business Impacts- The clean-up activities should be positive for local business and employment. In the long run the positive effects of a restored park and ecosystem should be beneficial to tourism and related businesses Improved access to the river shoreline to be created through the habitat restoration portion of the projects. Additional amenities could be added later by others.	
	Water Quality & Depth	3. Will there be a beach created for use?	3. There are no plans to create a beach.	
		4. Will we be able to paddle (canoe, kayak, boat, water ski)?	4. This project will remove sediment, but does not address the water levels due to the drawdown of the Estabrook Impoundment.	Milwaukee County is charged with determining if they will repair the dam and the timetable for doing so.
		5. Could dams or levies be utilized to allow portions of the river to be impounded during clean-up activities to allow us to use the river?	5. Sheet piling, small temporary dams and / or earthen berms will be used to keep clean-up areas dry. This will not provide for navigability for the remainder of the river and will not be deep enough for navigation. Required repairs to the Estabrook dam currently preclude refilling the impoundment.	Dam repairs and operation order control ultimate surface water elevation. This would be a costly interim action and would not be needed due to Cleanup to be completed early 2011. Until dam evaluation and repairs are complete, gates cannot be closed and water will not be impounded
	Fishing Safety & Access	6. Pier is not in a good location – can it be moved with this project?	6. Access issues can be addressed in the habitat restoration plan. Can have more specific brainstorming sessions to get more specific input when the time	

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
			comes. Pier may need to be removed and replaced as part of clean-up action. Alternate location/configuration can be pursued.	
		7. Will fishing opportunities be available such as: ▪ Shore-fishing, ▪ Bobber-fishing ▪ Pier-fishing ▪ Cane pole fishing	7. Fishing opportunities currently exist and will be increased and enhanced as part of the clean-up and habitat restoration. Removing fish advisories is one of the key long-term goals of the project.	
	Paddling & Boating	8. Will boat rentals be available?	8. This project will clean-up the river so that it will be safe for all people to use the river	This is a business opportunity if wanted. This can be part of the BID/Businesses getting involved to improve community needs – trying to attract businesses that promote recreation/ children's activities.
		9. Will a Kayak/canoe launch be added?	9. This is not part of the clean up and restoration project but can be pursued at a later date through another funding source.	Work with local groups promoting kayak/canoe – watercraft recreation to fund raise for launches/etc… things that aren't covered in the Legacy Act funding, but are complimentary.
	Walking, Hiking, and Bicycling	10. Will better trails be a part of the restoration plan?	10. This is not part of the clean up and restoration project but can be pursued at a later date through another funding source.	Community members getting involved with the planning process is easy and desired. Interested parties should

Table	Meeting Themes - Topics we heard you bring up at our June meeting	Community Questions and Concerns	Response - Proposed Action	Additional Resources
				work with the Parks department on specific ideas. Fundraising efforts will be supported as appropriate.
		11. Will bird watching opportunities be enhanced?	11. With the clean up and better habitat for fish, we hope/expect a variety of birds will naturally come to the area.	Community Members are welcomed and encouraged to get involved in the planning process. The Milwaukee Audubon Society would be a great partner to get involved.
	Historical Purposes & Design	12. Will the restoration provide an "Up North" experience?	12. The integrity of Lincoln Park as a natural area will be the goal of any restoration completed.	Legacy Act funding may assist with the rehabilitation of the river consistent with its historical uses. Alternate funding sources could be used to fund historical educational signs, publication, speakers and programs.
	Economic Benefits	13. How can tourism opportunities be improved with the project?	13. Improvements in overall condition, accessibility and appeal of the river will provide good opportunities for tourism.	Businesses/BID can be involved in helping to promote the project, fund aspects of the project not funded by Legacy Act and assist the community in promoting as a tourism destination.
		14. How can business opportunities bring in new funding to address some things not funded by this project?	14. As tourism opportunities are realized, business investments may be able to assist with funding aspects of the project that Legacy Act is not able to fund.	Getting tourism partners involved with the process will increase design alternatives.
		15. In what ways may river use be increased with improvements?	15. Improved access to the river shoreline to be created through the habitat restoration portion of the projects. Any wildlife habitat improvements made may be designed to improve human access projects. Additional amenities could be added later by other projects.	

Appendix II

Department of Health Services

Health Consultation

Health Consultation

Potential for Exposure to PCB Contamination in Sediments
of Lincoln Creek and the Estabrook Dam Impoundment,
Milwaukee County

Prepared by the
Wisconsin Department of Health Services

JANUARY 5, 2011

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR Toll Free at
1-800-CDC-INFO
or
Visit our Home Page at: http://www.atsdr.cdc.gov

HEALTH CONSULTATION

Potential for Exposure to PCB Contamination in Sediments of Lincoln Creek and the Estabrook Dam Impoundment, Milwaukee County

Prepared By:

Wisconsin Department of Health Services
Division of Public Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry (ATSDR)

Summary and Statement of Issues

Conclusion. DPH concludes that the consumption of designated fish species that are contaminated with polychlorinated biphenyls (PCBs) from Lincoln Creek and the Estabrook Impoundment is the most important source of exposure to PCBs from these waterways. Frequent and substantial exposure to PCBs over a long time (a year or more) can result in their accumulation in the body to the point where they could harm people's health, particularly the health of the developing fetus exposed to PCBs through their mother's body, or the very young exposed to PCBs in their mother's milk.

Basis for decision. An existing Fish Consumption Advisory warns the public against eating PCB-contaminated fish from these waterways. The exposure analysis performed in this health consultation indicates that consuming these fish can be an important source of PCB exposure.

Next steps. In order to protect community health and well-being, DPH recommends that the public follow the posted fish advisory signs and the fish consumption advisories published by the Wisconsin Department of Natural Resources.

Conclusion. DPH concludes that under "realistic" conditions, eating small amounts of sediments that are contaminated with PCBs from Lincoln Creek or the Estabrook Impoundment is not expected to result in illness over the short term.

Basis for decision. Health and environmental agencies planning the cleanup of PCBs in sediment aim to achieve a concentration that is much lower than would be needed to protect people from exposure via direct contact with sediment. Such exposure might occur from eating with dirty hands. PCB concentrations in sediment must be kept quite low in order to help prevent exposure over one's lifetime, and to keep PCBs out of waterways and fish. Daily, "worst-case" contact over a year or more with the most contaminated areas (which are not on the sediment surface) are unlikely, but does justify the need for measures to prevent exposure. Similarly, incidental exposure via hand-to-mouth contact could add to the lifetime exposure to PCBs from eating fish and from other sources. More importantly, these PCBs in sediments are available to enter the food chain and be consumed in fish.

Next steps. In order to protect community health and well-being, and prevent PCBs from entering the food supply, DPH recommends that park users wash hands after using the park, fishing, or wading in the riverbed.

Conclusion DPH acknowledges that small amounts of PCBs can be released into the air from contaminated soil or from exposed sediment, but concludes that the amount of PCBs that we might inhale from air is not expected to harm people's health.

Basis for decision. In a study by the Wisconsin Department of Natural Resources (WDNR), PCBs in air were measured at the nearby Parkway School, Glendale (Grande 2004), and found to be less than background levels found elsewhere in Milwaukee. In addition, worst case exposure

estimates were calculated using earlier air measurements made at PCB-contaminated dredge spoils elsewhere in Wisconsin. These worst-case estimates are very small compared to other sources of exposure, including accidentally eating small amounts of creek sediment from dirty hands, or from eating fish from the creek.

Next steps. To minimize minor sources of exposure to PCBs, DPH recommends that current best practices for dust control be followed during the staging and transport of PCB-contaminated dredge spoils. In addition, in the interest of safety, the public is advised to stay out of marked construction areas and away from construction equipment during the course of the sediment removal project.

Background

Site Description and History

Parklands and waterways within Glendale and the City of Milwaukee are a recreational destination for Milwaukee County residents. Lincoln Park is a 318-acre property located in parts of Glendale and the City of Milwaukee along the confluence of Lincoln Creek and the Milwaukee River. Included within the park are the Estabrook Impoundment (a shallow reservoir formed by the Estabrook Dam on the Milwaukee River at its confluence with Lincoln Creek, several islands within the impoundment, and a variety of recreational facilities such as ball sport fields, picnic areas, a swimming pool, and a golf course (Community Profile Network 1998). The area to the west of Lincoln Creek and the side of the west oxbow (Figure 1) are within the City of Milwaukee limits. The areas to the east of the Milwaukee River and south of the west oxbow are in Glendale.

PCBs have been identified as a contaminant of concern within the Milwaukee River system (Steuer *et al.* 1999), including in sediments of the Estabrook impoundment just downstream of the confluence of Lincoln Creek and the Milwaukee River (Figure 1). The PCBs in the Estabrook impoundment are believed to be from unidentified industrial sources (Appendix I), and are thought to significantly contribute to the transport and distribution of PCBs downstream in the Milwaukee River (WDNR 2005). Several surveys of PCBs in Lincoln Park sediments have been published since the early 1990s. Reported PCB concentrations in surficial sediments around Lincoln Park ranged from 0.26 to 3.3 parts per million in 1993 with a maximum concentration of 380 ppm in deeper sediments, and 2.3 to 100 parts per million in 1995 with a maximum of 870 ppm in deeper (1.3-2.1 meters depth) sediments of the lower west oxbow (Westenbroek 1993, Steuer *et al.* 1999). The area having the most concentrated PCBs in surficial sediments (1 foot deep or less) have been reported in the area of the west oxbow located west of the parkway and north of the concrete pier. The reported maximum concentrations in surface sediments were 460 ppm during a 2001-2003 survey (WDNR 2005) and 144 ppm in 2008 (STN 2009). Maximum concentrations are used in this report to provide "worst-case" estimates of exposure; the provided references should be consulted to gain a more complete view of the distribution of PCBs in park sediments.

A Fish Consumption Advisory is in effect for these waters (see discussion below). The recognition that eating fish from these waters can be a health hazard is not a new issue, and therefore will not be discussed in detail here. Exposure estimates to PCBs in fish are presented

below (1) for the purpose of comparison to other routes of exposure and (2) for the purpose of reinforcing the message of risk from consuming these fish.

Several other portions of the Milwaukee river watershed have completed, or are in the process of completing, the evaluation and cleanup of PCBs in sediments. These include the *Blatz pavilion lagoon project* in Lincoln Park (Milwaukee) completed in 2008, Cedar Creek (Cedarburg) under evaluation, and the Kinnickinnic River (Milwaukee) completed 2009 (WDNR 2008).

Demographics

Glendale, population 13,067 (U.S. Census Bureau, 2000) is located within the Milwaukee metropolitan area. The predominant racial makeup (2000 census) is 86.8% white, 8.1% black or African American, 3% Asian, and 1.8% Hispanic or Latino. Per capita income is similar to the statewide average. It is important to note that although Lincoln Park lies within the City of Glendale, users of the park represent a broader population within the City of Milwaukee, which is adjacent to the south of Glendale, as well as other nearby communities. However, there is no current information that accurately typifies park users.

Community Health Concerns

The major community health concerns addressed in this consultation are those associated with PCBs found in sediments of the Estabrook Impoundment. Possible routes of exposure to these PCBs are the consumption of fish from these waters, and from exposure to sediments, some of which are exposed and accessible during periods of low water levels. A third, though less significant, route of exposure is through inhalation of air potentially containing PCBs from these waters.

There has been an ongoing effort to educate the public about the risks of consuming PCB-containing fish from the Lincoln Park/Estabrook impoundment area. DHS has collaborated (discussed in more detail below) with WDNR, the City of Milwaukee Health Department, and the Milwaukee County Parks Department to prepare and post warning signs, and to provide information at public meetings.

The public has expressed other quality of life concerns related to Lincoln Creek, Lincoln Park, and Estabrook Dam. Most of these concerns lie outside of the immediate goals of removing contaminated sediment from the western oxbow of the Estabrook impoundment. However, DHS acknowledges the importance and legitimacy of these public concerns. DHS, in collaboration with local, state, and federal health and environmental agencies, conducted a series of public meetings that were based in the Health Impact Assessment approach, and were designed to address these concerns. The results of this work will be reported separately, but are summarized below in the Public Health Action Plan, and in Appendix II of this report.

Discussion

Exposure estimates were originally prepared in June 2009 (Thiboldeaux and Grande) to support a WDNR fact sheet on the project (Appendix 1). Below are revised versions of the June 2009 estimates.

PCB exposure from fish consumption. A consumption advisory, due to the presence of PCBs, exists for fish taken from Milwaukee River from the city of Grafton downstream to Estabrook Falls (WDNR 2010a, WDNR 2010b). The specifics of the advisory vary from "Do Not Eat" for large bottom feeders (carp), to limited consumption recommended for many smaller species (see Appendix I for excerpt from WDNR 2010b). Below is an estimate of exposure to PCBs (see ATSDR 2005) from consuming Redhorse from the Milwaukee River. The estimate assumes a consumption frequency of one meal per month, the maximum recommended in the WDNR advisory. The estimates are for adult fish consumption rates in Wisconsin (Fiore *et al.* 1989), under the consideration that our most toxicologically significant PCB exposures typically occur perinatally via the placenta and mothers milk (*e.g.* Patindin *et al.* 1997; 1998). This concept supports the need to limit cumulative PCB exposures that occur over many years.

Estimate of exposure to PCBs from consuming fish, based on WDNR fish data 2002-2007, Milwaukee River, Grafton to Estabrook Falls.

Comparison Values: PCB exposures imparting risk, using sensitive endpoints.

- "Great Lakes Protocol" *Health Protection Value* of **0.05 μg PCB/kg body wt/day** (Anderson *et al.* 1993). This value has been widely used in assessing PCB exposures in Wisconsin.
- Minimal Risk Level (*MRL*) for chronic exposure of **0.02 μg PCB/kg body wt/day** (ATSDR 2000). This comparison value was derived from epidemiological studies of human infants, and experimental studies using monkeys.

1. Equivalent whole-body exposure to 70 kg adult:

   (0.02 μg PCB/kg body wt/day)(70 kg) = 1.4 μg PCB/day

2. Fish consumption: 227 grams (about one-half pound) Redhorse meal, once per month. Equivalent to consuming 0.008 kg fish/day.

3. Average PCB found in Milwaukee River Redhorse: 1.33 mg PCB/kg fish fillet.

4. PCB dose from consuming Milwaukee River Redhorse:

   (1.33 mg PCB/kg fish)(0.008 kg fish/day) = **0.011 mg (or 11,000 ng) PCB/day**

5. Chronic dose to 70 kg adult:

(0.011 mg PCB/day)/70kg = **0.16 µg PCB/kg body wt/day**
This is 3.2-fold greater than the Great Lakes Protocol *Health Protection Value*, and 8-fold greater that the ATSDR *MRL*.

A similar calculation (not shown) using the average PCB concentration of Smallmouth Bass skin-on fillets from this area (0.20 mg/kg) yields a chronic dose of 0.023 µg PCB/kg body wt/day, which is approximately equal to the ATSDR *MRL* for chronic exposure, and about half of the Great Lakes Protocol *Health Protection Value.*

Exposure to PCBs from skin contact with exposed PCB-contaminated sediment. This exposure scenario assumes that visitors to Lincoln Park use their hands to touch exposed sediments that contain PCBs. The visitors later eat food or put fingers in their mouths without first washing hands.

1. Worst case from daily exposure to highest concentrations in shallow sediments (unlikely due to site-specific conditions):
    a. 460 mg PCB/kg soil x 100 mg incidental ingestion soil/day = **46 µg (46,000 ng) ingested PCB/day**
    b. **Adult dose =** 46 µg ingested PCB/day/70kg body weight **= 0.66 µg/kg body wt/day**
    c. **Child dose** = 460 mg PCB/kg soil x 200 mg incidental ingestion soil/day/10kg body weight = **9.2 µg/kg body wt/day**

    This worst-case daily exposure scenario is 13.2-fold greater than the Great Lakes Protocol *Health Protection Value*, and 33-fold greater than the ATSDR chronic *MRL*. Because children weigh less and potentially eat more soil, the worst-case scenario is has a caluculated exposure that is 184-fold greater than the Great Lakes Protocol *Health Protection Value*, and 460-fold greater than the ATSDR chronic *MRL*.

2. Exposure to the locally typical concentration range of 2.3 to 100 mg/kg PCB in shallow (surficial) sediment (Steurer *et al.* 1999), at a predicted typical exposure frequency. The exposure frequency used in this scenario is 3 visits per week, 5 months per year, which is equivalent to 0.164 visits per day:

    a. (2.3 to 100 mg PCB/kg soil) x 100 mg incidental ingestion soil/day = **0.23 to 10 µg (230 to 10,000 ng) ingested PCB/day**
    b. **Chronic adult dose =** 0.23 to 10 µg ingested PCB/day/70kg body weight x (0.164) = **0.0005 to 0.024 µg/kg body wt/day**

    Under the 60 visit/year exposure scenario, the chronic dose range is 0.01 to 0.48-fold that of the Great Lakes Protocol *Health Protection Value*, and 0.025 to 1.2-fold that of the ATSDR chronic *MRL*.

Exposure to PCBs in air near the Estabrook Impoundment. The concentration of PCBs in air has been measured near Lincoln Park atop Parkway School, Glendale (Grande 2004), elsewhere in Milwaukee, and in air during the removal and staging of PCB-contaminated sediments from the Fox River. The measurements were used to estimate several scenarios that expose Lincoln Park visitors and area residents to PCBs released to air from exposed, contaminated sediment:

1. **"Realistic" daily exposure for area resident**
   0.19 ng PCB/m^3 air x 21 m^3 air/24hr = **3.99 ng PCB inhaled per day.**
   This estimate is calculated from average PCB concentrations in air measured from Dec. 2002 to Dec. 2003 at Parkway School, Glendale (Grande 2004), and assumes a 24-hour exposure at varying activity levels (Derelanko & Hollinger 2002).

2. **"Realistic" average exposure for impoundment visitor**
   0.19ng PCB/m^3 air x 2hr x 3.2 m^3 air/hr = **1.2 ng PCB inhaled per visit.**
   This estimate is calculated from average PCB concentrations in air measured from Dec. 2002 to Dec. 2003 at Parkway School, Glendale (Grande 2004), and assumes a two hour visit at a moderate activity level.

3. **Theoretical maximum exposure for impoundment visitor.**
   10ng PCB/m^3 air x 1hr x 4.5 m^3 air/hr = **45 ng PCB inhaled per visit.**
   This calculated estimate assumes a one-hour visit at a high activity level, and that PCBs in air that are 50-fold higher than *average* concentrations and 11-fold higher than the *maximum* concentration measured at Parkway School (Grande 2004).

4. **Theoretical worst case in concentrated PCB environment.** 100ng PCB/m^3 air x 4hr x 4.5 m^3 air/hr = **1800 ng PCB inhaled per visit.**
   This estimate is calculated from highest PCB concentrations in air measured near staged sediment during the Fox River cleanup (D. Grande, WDNR, personal communication).

5. **Chronic dose to 70 kg adult at realistic daily exposure:**

   (3.99 ng per day PCB/day)/70kg represents a chronic exposure of = **5.7×10^{-5} μg PCB/kg body wt/day** (or 0.057 ng PCB/kg body wt/day)
   This is over 877-fold *less* than Great Lakes Protocol *Health Protection Value*, and 350-fold *less* than the ATSDR chronic *MRL* .

Summary of calculated exposure scenarios and discussion of uncertainty. The various exposure calculations indicate that, consistent with accepted knowledge of the bioaccumulative effects of PCBs, the most important exposures (on the order of 11,000 ng PCBs per day) would be from eating fish. Exposures to a frequent park visitor having regular contact with exposed sediment would be on the order of 230 to 10,000 ng per day. Inhalation exposures would be on the order of 1 to 45 ng per day. As with any estimate of environmental exposure, it is impossible to accurately predict exposure to an individual within the population due to variation in individual behavior, frequency of exposure, and variation of the concentration of contaminants in the

environment. A range of estimates, including unlikely "worst case" calculations, are included within each exposure scenario in order to provide a range of possible exposures.

Toxicology of PCBs (from ATSDR 2009). The polychlorinated biphenyls are a group of structurally related molecules that are chemically stable, highly soluble in oil, and are insoluble in water. PCBs last for decades in the environment, tend to accumulate in body fats, and accumulate in the food chain. In the environment, PCBs are found mostly adsorbed to sediments and soil rather than in water. PCBs have various effects on the body that are related to physiological development, regulation of the cell cycle, and tumorogenesis. Several population-level studies have linked prenatal and perinatal exposure to PCBs to lower birth weights and learning problems (Guo *et al.* 1999; and reviewed in ATSDR 2000). Some forms of PCBs are suspected human carcinogens. Due to the widespread dispersion and chemical stability of PCBs in the environment, some exposure (mostly through food) is unavoidable.

Impairment of the aquatic habitat. Earlier work (WDNR 2005: see figure 5b) noted that the concentration of PCBs in sediments throughout the western oxbow of Lincoln Park exceed the threshold of impairment of the aquatic habitat (WDNR 2003). That finding does not contradict the conclusions of this report. Aquatic organisms that are continuously exposed to a pollutant throughout their life cycle typically are affected by lower concentrations than people having infrequent contact.

Community Outreach. DPH conducted community outreach related to the Lincoln Creek remediation, in collaboration with a team of agencies planning the remediation project. These included the Wisconsin Department of Natural Resources (WDNR), the U.S. Environmental Protection Agency (EPA), the Milwaukee County Parks Department, the City of Milwaukee Health Department, the North Shore Health Department and University of Wisconsin-Extension. During June-August 2010, DPH guided the outreach and education effort using Health Impact Assessment (HIA) principles to facilitate community engagement activities. A summary of the project activities within the context of the HIA framework is described in Appendix II.

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than are adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to food, for access to medical care, and for risk identification. Thus adults need as much information as possible to make informed decisions regarding their children's health.

Studies of health effects of PCBs in populations have examined children of mothers who were

exposed to PCBs. When these women get pregnant, the PCBs are released into their blood and may reach and enter the developing baby. This exposure may cause children to have slightly lower birth weights and to have slightly delayed learning milestones (Patindin *et al.* 1997; 1998, ATSDR 2000, ATSDR 2006). When children eat fish themselves, they are also exposed to PCBs. However, the greater goal of removing PCBs from the environment is to prevent lifetime accumulations that begin in childhood and extend into adult life. Eating contaminated fish is considered to be the most important exposure pathway for the child development-related health effects of PCBs. Direct contact with PCB-contaminated sediments in the Estabrook impoundment, while constituting a much lower level of exposure, is another route of exposure to these chemicals. Public education directed at parents, along with posted warnings, should be used to help prevent exposure.

Conclusions

- DPH concludes that consistent with the existing fish advisory, eating fish from Lincoln Creek and the Estabrook Impoundment are the most important routes of exposure to polychlorinated biphenyls (PCBs) found in these waterways. A long-term diet of these fish could harm people's health.

- DPH concludes that under typical conditions, eating small amounts of PCBs from hands that are dirty with sediments from Lincoln Creek or the Estabrook Impoundment is not expected to result in illness over the short term. The levels of PCBs allowed in sediment and soil is kept low in order to help prevent exposure over one's lifetime, and to keep PCBs out of waterways and fish. "Worst-case" exposures to PCBs in exposed sediments over a year or more are unlikely, but justify the need for measures to prevent chronic exposure to the public.

- DPH concludes that exposure to PCBs in the air around Lincoln Creek is not expected to harm people's health. The amount of PCBs that we might inhale from air near contaminated sediment in Lincoln Creek is small compared to accidentally eating small amounts of creek sediment from dirty hands, or from eating fish from the creek.

Recommendations

The most important ways to avoid exposure to PCBs from Lincoln Creek are:

- By following the existing fish consumption advisory designated for the Milwaukee River from Grafton to Estabrook Falls.
- By washing hands with soap after touching exposed sediment

Public Health Action Plan

- Support effort to remove PCBs from the impoundment. DHS supports the present and ongoing effort by WDNR and U.S. EPA to remove PCBs from the Milwaukee River and

its tributaries, with the goal of removing the fish consumption advisory from these waters.

- Advisory signs. DHS has collaborated with WDNR, the City of Milwaukee Health Department, and the Milwaukee County Parks Department to prepare and post signs detailing the fish consumption advisory (see Appendix I). The signs are posted at various locations along the waterway in Lincoln Park and along the Milwaukee River down to Estabrook Falls. DHS will assist in replacing and/or revising the signs as needed.

- Community Outreach. DPH and their local, state, and federal partners participated in past and ongoing community outreach work related to the Lincoln Park remediation. Work to date has included public availability sessions, information pamphlets, and a series of discussion groups patterned on the Health Impact Assessment (HIA) model. Ongoing work with our partners will include a written report summarizing the HIA discussions, and an information kiosk at the remediation site.

Authors, Technical Advisors

Robert Thiboldeaux, PhD
Toxicologist
Division of Public Health
Wisconsin Department of Health Services

Technical Advisors

Jessica Maloney
Public Health Educator
Wisconsin Bureau of Environmental and Occupational Health
Division of Public Health
Wisconsin Department of Health Services

Erin Mader, MPH
Public Health Educator
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services

Paula Tran Inzeo, MPH
Wisconsin Population Health Fellow
Bureau of Environmental and Occupational Health
Wisconsin Department of Health Services

References

Anderson HA, Amrhein JF, Shubat P, Hesse J. 1993. *Protocol for a Uniform Great Lakes Sport Fish Consumption Advisory.* Great Lakes fish advisory task force protocol drafting committee.

ATSDR. 2000. Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological profile for Polychlorinated Biphenyls (PCBs).* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

ATSDR Health Consultation. 2005. Zeunert quarry pond polychlorinated biphenyl site, City of Cedarburg, Ozaukee County, Wisconsin. U.S. Dept. Health Human Services, Agency for Toxic Substances and Disease Registry. Internet: http://www.atsdr.cdc.gov/hac/PHA/ZeunertQuarryPond/CedarburgHCfinal041105.pdf

ATSDR. 2006. Final Public Health Assessment for the PCB Contaminated Sediment in the Lower Fox River and Green Bay, Northeastern Wisconsin. U.S. Dept. Health Human Services, Agency for Toxic Substances and Disease Registry. Internet: http://www.dhs.wisconsin.gov/eh/PHA/PHApdf/FinalFoxRiverPHA031406.pdf

ATSDR. 2009. Health Risks from Polychlorinated Biphenyls in Fertilizer Applied to Soil in Recreation Areas, Milwaukee, Milwaukee County, Wisconsin. U.S. Dept. Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. Internet: http://www.atsdr.cdc.gov/HAC/pha/MilwaukeePCBinMilorganite/HealthRisksfromPCBinFertilizerAppliedtoSoilinRecreationAreas6-23-09.pdf

Community Profile Network, Inc. 1998. Village Profile: Glendale, Wisconsin. Internet: http://www.villageprofile.com/wisconsin/glendale/glendale1.html#rec

Derelanko MJ, Hollinger MA (*eds.).* 2002. Handbook of Toxicology, 2nd ed. CRC Press.
Grande, D. 2004. Spatial Distribution of Airborne PCBs in Milwaukee. Wisconsin Department of Natural Resources Bureau of Air Management. Publication Number: PUBL-AM-342 2004. Internet: http://dnr.wi.gov/air/pdf/MilwPCBsFinal.pdf

Fiore BJ, Anderson HA, Hanrahan LP, Olson LJ, Sonzogni WC. 1989. Sport fish consumption and body burden levels of chlorinated hydrocarbons: a study of Wisconsin anglers. *Arch Environ Health 44.2:*82-89.

Guo YL, Yu M-L, Jsu C-C, Rogan WJ. 1999. Chloracne, goiter, arthritis, and anemia after polychlorinated biphenyl poisoning: 14 year follow-up of the Taiwan Yucheng cohort. *Env. Health Persp. 107:*715-719.

Patandin S, Weisglas-Kuperus N, de Ridder MAJ, Koopman-Esseboom C, van Staveren WA, van der Paauw CG, Sauer PJJ. 1997. Plasma polychlorinated biphenyl levels in Dutch preschool children either breast-fed or formula-fed during infancy. *Am. J. Public Health. 87:*1711-1714.

Patandin S, Koopman-Esseboom C, de Ridder MAJ, Weisglas-Kuperus N, Sauer PJJ. 1998. Effects of environmental exposure to polychlorinated biphenyls and dioxins on birth size and growth in Dutch children. *Pediatr. Res. 44:*538-545.

Steuer JS, Fitzgerald SA, Hall DW. 1999. Distribution and Transport of Polychlorinated Biphenyls and Associated Particulates in the Milwaukee River System, Wisconsin, 1993–95. U.S. Geological Survey Water-Resources Investigations Report 99–4100. Available: http://wi.water.usgs.gov/pubs/WRIR-99-4100/wrir-99-4100.pdf

STN. 2009. *Focused Remedial Investigation, Lincoln Park/Milwaukee River Channel Sediments, Milwaukee, Wisconsin.* Prepared by STN Environmental JV, for U.S. EPA, Great Lakes national Program Office, Reg. V. START contract no. EP-S5-06-03. Tech. Direction Doc. no. S05-0801-002 August 10, 2009

Tilson HA, Jacobson JL, Rogan WJ. 1990. Polychlorinated biphenyls and the developing nervous system: cross-species comparisons. *Neurotoxicol. Teratol. 12:* 239-248.

U.S. Census Bureau. 2000. Fact sheet for Glendale city, Wisconsin. http://factfinder.census.gov

Westenbroek S. 1993. Cedar Creek polychlorinated biphenyls mass balance, Phase I- Data summary and analysis, final draft: Wisconsin Department of natural Resources.

WDNR. 2003. Consensus-Based Sediment Quality Guidelines: Recommendations for Use & Application. Wisconsin Department of Natural Resourses. Document WT-732 2003. Internet: http://dnr.wi.gov/org/aw/rr/technical/cbsqg_interim_final.pdf

WDNR. 2005. Estabrook Impoundment Sediment Remediation Pre-Design Study. Project Completion Report to USEPA. GLNPO Grant ID GL2000-082. Wisconsin Department of Natural Resources PUBL-WT 826.

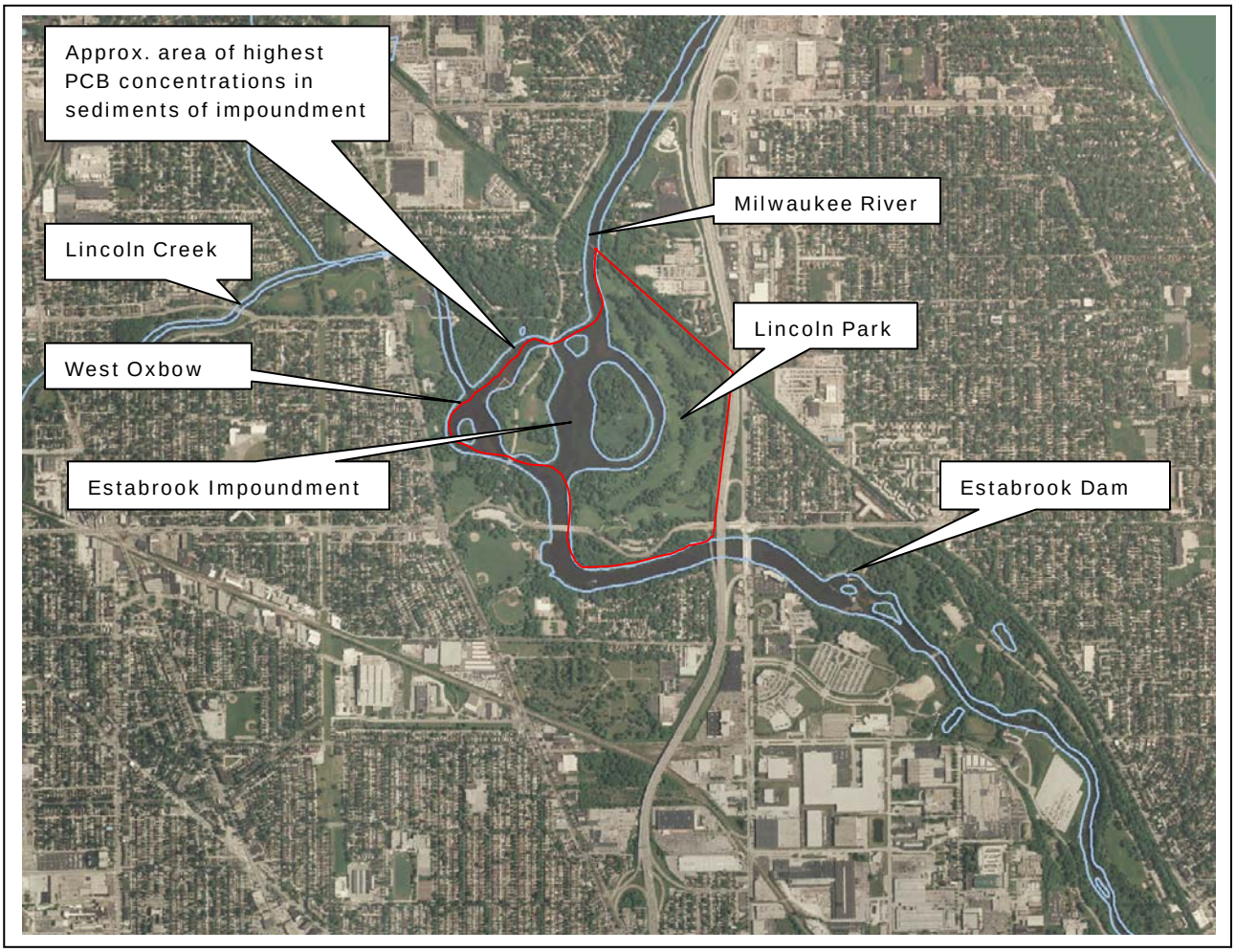
WDNR. 2008. Agency press release: Cleanup finished on popular Blatz Pavilion lagoon in Milwaukee. Internet: http://dnr.wi.gov/news/DNRNews_Article_Lookup.asp?id=821.

WDNR. 2010a. Fish Consumption Advisories. Wisconsin Dept. Natural Resources. Internet: http://dnr.wi.gov/fish/consumption/

WDNR. 2010b. Choose Wisely: a health guide for eating fish in Wisconsin. Wisconsin Dept. Natural Resources. Internet: http://dnr.wi.gov/fish/consumption/FishAdvisoryweb2010lo.pdf

Figures

Figure 1. Map of Lincoln Park and surrounding area. City of Glendale, Milwaukee County, Wisconsin. **Prepared using WI DNR GIS Webview, *http://www.dnr.state.wi.us/maps/gis/appwebview.html***



Appendix I. *WDNR fact sheet on Lincoln Creek, prepared with the cooperation of DHS and the City of Milwaukee Health Department.*

Estabrook Impoundment/Lincoln Park Contaminated Sediment Questions and Answers

Sediments that have been deposited within the Estabrook Impoundment, specifically the western oxbow area at Lincoln Park are contaminated with PCBs. This fact sheet answers some of the most frequently asked questions about these sediments.

What are PCBs?

PCBs are polychlorinated biphenyls, a group of over 100 related molecules that are soluble in oil and insoluble in water. These compounds were manufactured in the United States until 1977, when they were banned from use. These chemicals are very persistent in the environment and tend to accumulate in the body fats of fish, humans and other animals. PCBs in the environment tend to be found in soil and sediment rather than in the water column. Documented health effects related to high exposure to PCBs include low birth weights and developmental delays in young children. The US EPA classifies some types of PCBs as probable human carcinogens.

How contaminated is the area?

The area is contaminated.with PCBs and other pollutants common in urban areas. The highest concentrations of PCBs have been found in the western oxbow of Lincoln Park.
Over 100,000 cubic yards of sediment are located in the Milwaukee River upstream from the Estabrook Park Dam. Studies have shown PCB concentrations ranging from less than 1.0 parts per million (ppm) to 870 ppm. The sediments with the highest concentrations are buried under sediments with lower concentrations. Sediments with concentrations greater than 50 ppm are regulated by the Toxic Substances Control Act.

How does this compare to other areas?

The western oxbow in Lincoln Park is more contaminated than other areas within the Milwaukee River. The PCB sediments in the Milwaukee River in Lincoln Park areas Northwest of Hampton Avenue contain the highest concentrations of PCBs in the Milwaukee River. .

What is the source of contamination?

PCBs were used as lubricants in the manufacturing of various products from 1930 to 1977. There is no identified source which caused the contamination for this sediment. The mixture of PCBs found in this area is different from those found in other areas of the Milwaukee River. There is no identified ongoing source. The PCB contamination is believed to have come from Lincoln Creek, which had a long industrial history.

Is there a problem with coming in contact with the sediments?

It is best not to have contact with the sediment. This means staying out of the river and riverbed. Signs are posted throughout the Park to recommend users to not come in contact with the

sediments. Touching the sediments will not make you sick, but ingestion of PCB contaminated sediment from dirty hands should be avoided.

People can be exposed to PCBs by swimming, wading or playing in the river or river bed. When water levels are low, it is easier to walk and play on the river bed. Parents are asked to keep children and pets from playing near the river edge and to keep out of the river bed and exposed areas when water is low. If river soils are touched, wash hands with soap and water, especially before eating and when returning home take a good soap shower or bath. Follow guidance posted on the signs.

Will someone get sick by coming in contact with PCB contaminated sediments?

Exposure to PCBs from direct contact or from airborne particles at the levels found in the impoundment is not expected to result in illness over the short term. However, PCBs can accumulate in the body over time to the point where they can cause harm. This is especially true if we eat fish from PCB-contaminated waterways. Therefore, it is important to minimize our exposure by removing PCBs from the environment.

Figure 1. Signs like this are found near contaminated areas in Lincoln and Estabrook Parks

What is being done to solve the problem?

The area in front of the Blatz Pavilion was cleaned up (remediated) in 2008. The Wisconsin Department of Natural Resources, US EPA and Milwaukee County are working together to plan a clean up of the contaminated sediments in Lincoln Park. A feasibility study is underway, and the state is in the process of applying for Great Lakes Legacy Act funding for managing the sediment.

Can I eat fish caught in the area?

It is best to follow the fish consumption advisory for the area. See PCB advisory information below. Pregnant women and small children should avoid eating fish contaminated with PCBs. Carp in the Milwaukee River in this area, including Lincoln Creek, contain high levels of PCBs and should not be eaten, at any size. Other fish can be eaten in limited amounts. See the

Wisconsin fish advisory booklet for safe fish to eat. They are listed in the section for the Milwaukee River from the City of Grafton downstream to Estabrook Falls.

Waterbody/Species	Unrestricted	Eat no more than 1 meal a week or 52 meals/year	Eat no more than 1 meal a month or 12 meals/year	Eat no more than 1 meal every 2 months or 6 meals/year	Do Not Eat
Milwaukee River from the city of Grafton downstream to Estabrook Falls					
Black Crappie		*All sizes*			
Carp					*All sizes*
Largemouth Bass			*All sizes*		
Northern Pike				*All sizes*	
Redhorse			*All sizes*		
Rock Bass		*All sizes*			
Smallmouth Bass			*All sizes*		
Trout and Salmon	*Follow the Lake Michigan PCB advisory*				

Figure 2. Fish consumption advice

Is it better to have the contaminated sediment submerged under water or above water?

When water covers the sediment there is less potential for humans to directly contact the sediment However, when the sediment is underwater, contaminants are more available to fish and other aquatic life and have a greater ability to be flushed from the impoundment area to downstream locations. The impoundment is a significant ongoing source of PCBs in the Milwaukee River system. If the sediment is exposed, erosion control measures such as vegetating the area keep the sediment in place. There are grass and other plants growing on the exposed sediment now (see below). This helps to limit dust blowing off the riverbed and reduces the possibility for erosion.

Figure 3. West Oxbow in May 2009

Figure 4. West Oxbow in August 2009

Where did the information about PCB exposure risk come from?

Department of Natural Resources (DNR) and the Wisconsin Department of Health Services (DHS) staff have been working together on this issue. DNR air quality staff and DHS health experts reviewed data and research from Lincoln Park and elsewhere in Wisconsin. They concluded that inhalation exposure of PCBs from exposed sediments in the Lincoln Park area is not significant compared to exposure from fish consumption or direct contact with exposed sediment. The calculations used to derive the risk exposure statement are available by contacting Marsha Burzynski at DNR (contact information below).

The amount of PCB that a person might inhale from air near contaminated sediment in Lincoln Park is small compared to eating fish from the river or from accidentally ingesting small amounts of sediment from dirty hands. The most important way to avoid exposure to PCBs is by following fish consumption advice for waters in this area. Park and river users should also avoid touching or walking on exposed sediment. If users do touch exposed sediment, they should wash, especially before eating.

For further information please contact

Health Effects:
City of Milwaukee Health Department (414) 286-3616,
North Shore Health Department (414) 371-2980 or
Wisconsin Department of Health and Family Services at (608) 266-1120.

Sediment Contamination and Clean-Up - Marsha Burzynski, Dept of Natural Resources (414) 263-8708 (marsha.burzynski@wi.gov)

More information about PCBs can be found at http://dhfs.wi.gov/eh/HlthHaz/fs/PCBlink.HTM
Milwaukee River PCB mass balance report http://wi.water.usgs.gov/pubs/WRIR-99-4100/
Fish consumption advisory http://www.dnr.state.wi.us/org/water/fhp/fish/pages/consumption/index.shtml
EPA PCB home page http://www.epa.gov/opptintr/pcb/

Appendix II. Health Impact Assessment Pilot Project Summary for Milwaukee Estuary – Lincoln Park Area of Concern

Prepared by Paula Tran Inzeo, MPH and Erin Mader, MPH

Beginning in 2009, the Wisconsin Bureau of Environmental and Occupational Health (BEOH) became involved in the Lincoln Park and Milwaukee River Channels Area of Concern (AOC) Sediment Remediation Project – Phase II. High levels of polychlorinated biphenyls (PCBs) were identified in waterways in this area, and the remediation project, funded by the Great Lakes Legacy Act, aims to remove these contaminants. A team of agencies are planning the remediation project activities, including the Wisconsin Department of Natural Resources (WDNR), the Environmental Protection Agency (EPA), the Milwaukee County Parks Department, the Milwaukee Public Health Department, the North Shore Health Department and UW-Extension. BEOH joined this team to guide the outreach and education using Health Impact Assessment (HIA) principles to facilitate community engagement activities. Partnership development across sectors - facilitating collaboration among the EPA, DNR, and local agencies - was critical to effectively conducting these activities. Below is a summary of the project activities within the context of the HIA framework.

Health Impact Assessment (HIA) Process for the Milwaukee AOC Project

Step 1. Screening: Determine whether or not a HIA is warranted

The Milwaukee AOC project was screened by BEOH and project partners during the Spring of 2010. Local citizens expressed a desire to be better informed about the details of the project and some have been vocal about their concerns on aspects of the remediation plan. An issue of particular contention was the status of the Estabrook Dam, which forms the impoundment at the confluence of Lincoln Creek and the Milwaukee River, and which is currently in disrepair. Milwaukee County is in the process of deciding whether to repair or to remove the dam. To provide technical assistance to project partners and the community on the remediation project, BEOH used an evidence-based approach - the HIA framework - to engage citizens, to collect their concerns, and to help democratize decisions associated with the remediation of the area, particularly decisions pertaining to public health.

To screen the project, BEOH and project partners consulted background information to create an environmental and human health profile of the community. Resources that were consulted include the EPA website, the WDNR website, the Agency for Toxic Substances and Disease Registry's (ATSDR) Baseline Report of the Milwaukee 30th Street Corridor, and information about recently completed Lincoln Park Sediment Remediation Phase I. In addition, the project partners held a Community Availability Session (open house) in November 2009. Partnering agency representatives were available to answer community questions about the project.

Through this screening process, it was determined that the project is linked to health in multiple ways. Two intervention points were identified:

1. Community recommendations for remediation plan (logistics and final outcome/design)
2. Community recommendations for public health communication improvement and other PCB exposure reduction methods (e.g. fish advisories)

The partners determined that an HIA would be useful as a guide for

1. *Systematically gathering more community input* to understand perceived health impacts of the remediation and to identify features the community would like to see incorporated in the remediation process and resulting changes to the area
2. *Collecting and reviewing resources, including scientific and grey literature,* to provide further context for the impacts of remediation projects on health determinants and health

HIA was used to provide partnering agencies a framework for engaging the Lincoln Park community, though the term 'HIA' was not explicitly used in the dialogue with community members. The ATSDR Action Model was mentioned as a guide in the first community meeting, though just briefly explained. Technical terminology about these frameworks was avoided intentionally, as the remediation project in itself entailed numerous technical steps and scientific language that needed to be translated to establish a broad, clear community understanding. The purpose of conducting the HIA was to design better communication of technical details about the clean-up project to a lay audience while also soliciting their insight and identify ways to incorporate community input into the process and final project outcome. Therefore, the decision was made to avoid the term 'HIA' and instead focus on the principles of community engagement and use the HIA steps as a guiding process to gather community feedback.

BEOH provided technical assistance in this step by

- Compiling materials for community outreach and education
- Providing leadership and convening the project team in-person and by teleconference to explain HIA and establish a common understanding of the goals of the process
- Meeting with university researchers to gain insight into the community through learning about their work on relevant public health studies of the area
- Brainstorming potential HIA key stakeholders and activities

Step 2. Scoping: Determine which health impacts to evaluate and the methods for analysis

In the Scoping Phase, the following activities were conducted to determine which impacts to evaluate and methods for analysis

1. Planning meetings were held with project partners, including a dry-run of the community input meeting (focus group style table discussions)
2. A Community Input Meeting was held on June 16, 2010 to solicit community thoughts, ideas, and concerns

BEOH provided technical assistance in this step by

- Planning format and logistics for the Community Input Meeting
- Creating materials for the meeting including educational flyers, advertisements for the meeting
- Managing RSVPs for the meeting and responding to community questions
- Preparing table facilitator scripts and ground rules
- Facilitating the meeting and guiding discussion, including facilitating one table discussion
- Recording participant thoughts, ideas, and concerns, summarizing and reporting back these concerns during the meeting to let the community know their input was captured and ask if any points were missed or misinterpreted
- Providing refreshments and handouts for meeting attendees

Step 3. Assessing Risks and Benefits: Assess impacts using existing data and qualitative and quantitative research methods to determine the magnitude and direction of potential health impacts

The Assessment Phase involved the following steps:

1. Compiling data/community input collected at the first meeting
2. Conducting qualitative analysis to identify themes
3. Identifying answers to community questions and ways to shape the remediation process through incorporation of feedback
4. Identifying resources for concerns and ideas outside the scope of the Great Lakes Legacy Act project

BEOH provided technical assistance in this step by

- Preparing, collecting, and compiling meeting evaluations from June 16,2010
- Performing qualitative analysis on the community comments collected during the Scoping Phase
- Summarizing key themes and questions in a summary table
- Facilitating each agency's response to each community-identified issue or idea
- Identifying resources for issues outside the scope of the project
- Planning for the reporting of this information back to the community on July 28, 2010

Step 4. Reporting: Synthesis of Results and Recommendations

Two goals were identified for the reporting phase:

1. To provide recommendations/ mitigations for remediation project and resulting changes to the area to maximize potential positive health impacts and minimize potential negative health impacts
2. To document process and lessons learned (See page 6 for summary of lessons learned and challenges)

Three methods of reporting were established.

1. A *Community Input Summary Table* was created which outlined all of the comments from the community at the June 16, 2010, meeting, as well as written comments received by project partners after the meeting. This table included detailed responses from the project partners to each community question, concern, or idea. For issues outside of the scope of the remediation project, resources and contacts were provided.
2. A *meeting was held on July 28, 2010* to report back to the community about a) what they heard at the June 16,2010 meeting b) respond to questions and concerns using the *Community Input Summary Table* as a guide and c) to provide additional resources and avenues for input for issues outside of the scope of the project. Project partners presented information on key areas including sediment, health, habitat, and recreation. Experts and project team members were available to answer questions during a panel discussion.
3. A *Health Impact Assessment Report* will be created, containing the information gathered throughout the process, documentation of lessons learned, and implications/next steps based on the HIA process.

BEOH provided technical assistance in this step by

- BEOH created a site-specific page linked to the State website that includes project information, resources, and public health recommendations: http://www.dhs.wisconsin.gov/eh/WISites/LincolnPark/index.htm
- Drafting the *Community Input Summary Table* and updating it with partner feedback
- Compiling and facilitating review of the presentations for the July 28, 2010 meeting
- Planning meeting logistics and materials

- Facilitating and presenting at the July 28, 2010 meeting (BEOH was responsible for addressing the health-related comments and questions from the June 16, 2010 Community Input Meeting)
- Transcribing community comments and questions at the meeting
- Preparing, collecting, and compiling meeting evaluations

Recommendations & Mitigation Strategies Based on Community Input

Below are potential recommendations for the Lincoln Park Sediment Remediation Project.
Note: These recommendations were derived through thematic review of notes from community input sessions. Prior to formalizing recommendations, the community should be consulted to review and confirm that the recommendations reflect community desires.

Overarching Recommendation

Overall, the community expressed that communication strategies need to be strengthened – project partners need to establish clear channels of communication through which community members can express their concerns and be updated on project details. Many misconceptions about the project goals, logistics, and related health risks emerged during community meetings and through public comments. Many of these concerns could have been mitigated had community members been made aware of existing communication venues to ask questions and share concerns.

Health Recommendations

1. Improve outreach plans to target those most at risk of PCB exposure in Lincoln Park.
    a. Identify who is consuming fish from the park and tailor messages.
    b. Provide better outreach to mitigate PCB exposure *before* and *during* the remediation.
    c. Improve signage, for example, through making larger fish signs and making signs more culturally relevant to park users.
2. Provide outreach information about pet exposure.
3. Provide outreach and education for parents and children and consider using the schools as a venue for outreach.
4. Consider mass mailings as a way to communicate information about the clean-up project and related health risks.
5. Provide more information about the health risks of PCB exposure (i.e. associated health outcomes).
6. Consider water quality concerns related to outside events, such as heavy rains and other sources of pollutants (e.g. agricultural run-off).

Sediment Recommendations

1. Better communicate details of project logistics to the public. Information requested includes:
    a. Project timeline
    b. Where sediments will be disposed
    c. Status of PCB contamination in sediments during and after remediation
    d. How the area will be de-watered
    e. How the sediment remediation will work in tandem with the Estabrook Dam project
    f. Identify truck routes and ensure they will not damage roadways
2. Expedite the clean-up process as much as possible.
3. Monitor PCB movement downstream.

4. Monitor and enforce safety processes during remediation.
5. Create a deeper channel for recreational purposes (e.g. paddling, fishing).
6. Limit erosion.
7. Minimize use of riprap.
8. Protect existing properties, roads, and infrastructure.
9. Remove broken cement.

Habitat Recommendations

1. Increase fish species and shallow pools for fish raising young.
2. Create deep pools or wetlands to manage flood waters.
3. Limit stagnant water, weeds, and mosquitoes and potential related health risks.
4. Protect habitats for bald eagles and herons.
5. Make the island a wildlife refuge.
6. Create a buffer between the golf course and the park.
7. Remove invasive species and plant a diverse range of native species.
8. Limit clear cutting and protect existing trees.
9. Consider the entire watershed in the design and logistics of clean-up.

Recreation Recommendations

1. Provide recreational opportunities for children after the project.
2. Create a beach for park users.
3. Create deeper water channels to facilitate paddling.
4. Provide dams or levies during remediation to allow recreation.
5. Move the pier to a better location and improve fishing opportunities.
6. Provide boat rentals and a canoe/kayak launch.
7. Consider creating new trails.
8. Enhance bird watching opportunities.
9. Improve tourism opportunities.
10. Increase use of the river.

Step 5. Monitoring: Includes evaluation, describes how he process and findings of the HIA affects the decision and ultimate health policy outcomes

Goals of monitoring and evaluation include

1. Showing the community that their voices have been heard
2. Providing ways for the community to proactively hold the group accountable
3. Specifying community-identified success indicators

Current monitoring and evaluation plans that have been developed to accomplish these goals will involve

1. Future outreach
    a. Community meetings
    b. Website updates
    c. Email communication
    d. Dissemination of other relevant project information, such as changes to timelines and updates on remediation progress

    e. A kiosk will be designed and placed in the park to display project and health-related information
2. A health communication plan will be developed based on community input from the June and July meetings

These monitoring and evaluation components were developed based on the community feedback received at both June and July meetings. The community provided ideas for populations to target with public health communications and ways to tailor messaging to make it more effective.

Lessons Learned

1. It is important to define roles and responsibilities of partners early in the HIA process.
    a. Appointing meeting facilitators and other leadership roles can streamline communication processes and planning.
    b. Defining expectations among partners can ensure that objectives are met.
2. The Screening and Scoping Phases should be allotted adequate time to clearly identify the scope of the potential HIA and available resources, as well as to clarify the intended audience and intervention points. Doing so will more effectively shape the HIA activities and timeline.
3. Timelines need to be realistic, flexible, and revisited at each step of the process.
4. When projects become technical, it is valuable to have an outreach liaison to ensure messages are understandable and relevant to the community.

Challenges

1. Balancing a strong local control voice and technical support from the State
    a. To remain true to HIA principles, it was essential to ensure the community drives the process. This can be challenging when funding streams dictate project partners, activities, and timelines.
2. It is difficult to plan outreach and communication strategies in response to community needs when operating under the confines of various agency public relations restrictions.

Please contact DHSEnvHealth@wi.gov for any of the following materials and resources.

1. Agendas
2. Minutes/ notes
3. Fliers
4. Evaluation forms
5. Presentations from June and July meetings
6. Table
7. Sign in sheet

CERTIFICATION

This Health Consultation for an Evaluation of the Health Concerns Associated with the Kenosha County Outdoor Wood Boiler Investigation was prepared by the Wisconsin Department of Health Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with the approved methodology and procedures existing at the time the Health Consultation was begun. Editorial review was completed by the Cooperative Agreement partner.

Paul Mudge
Technical Project Officer
CAT, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Health Consultation and concurs with the findings.

Alan Yarbrough
Team Leader
CAT, CAPEB, DHAC, ATSDR