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.

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

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.

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/