

# PCBs found in soon-to-be-dredged Indiana Harbor and Ship Canal

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University of Iowa researchers have confirmed that sediments of the Indiana Harbor and Ship Canal (IHSC) in East Chicago, Ind., are contaminated with polychlorinated biphenyls (PCBs).

The IHSC, part of the Calumet River tributary of Lake Michigan, will begin being dredged in the next few years to maintain the proper depth for ship traffic, with uncertain environmental impacts in regard to PCBs. Scientists aren't sure whether dredging will help the situation by removing the potentially harmful compounds or hurt it by stirring them up.

Employing tandem mass spectrometry, an analytical technique to determine the elemental composition of a sample or molecule, the UI researchers found high levels of PCBs. The origin of the PCBs is unknown, but they strongly resemble Aroclor 1248, a potentially [toxic compound](#) that may pose direct health hazards to humans. This mixture was used in [hydraulic fluids](#), vacuum pumps, plasticizers and adhesives, according to the U.S. Department of Health and Human Services.

"The presence of PCBs is important because dredging will impact the fate and transport of chemicals," said Keri Hornbuckle, professor of civil and environmental engineering in the UI College of Engineering and corresponding author of the study, published in the journal *Environment International*.

"It is quite possible that dredging will provide a major improvement in

the situation. It may remove PCBs that are available to fish and other wildlife, and reduce the release of PCBs from the sediments," she said. "On the other hand, dredging might increase the availability and mobility of PCBs. Now that we know PCBs are present, these questions are pertinent."

Hornbuckle collaborated on the research with first author Andres Martinez, a graduate student in civil and environmental engineering; Karin Norstrom, a postdoctoral student in civil and environmental engineering; and Kai Wang, an assistant professor of biostatistics in the college of public health.

The IHSC is an active canal system that continues to support large vessels. But to remain viable for industrial shipping, the U.S. Army Corps of Engineers, Chicago District, began a long-term dredging project to restore adequate navigational depth.

Due to years of heavy industrial operation, the IHSC has been contaminated with PCBs. Prior to this study, there was little published data of the spatial extent and concentration magnitude of PCBs in the sediment in IHSC. The Army Corps of Engineers reported that PCBs have existed in IHSC sediment since 1977, but has not published a full report.

The PCB levels found here are comparable to other PCB-contaminated sites in the U.S., most established by law as Superfund Sites, which requires the removal of contaminants from environmental media such as soil, groundwater and sediment. The IHSC is not a Superfund Site.

Provided by University of Iowa

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