DETROIT RIVER FISH CONSUMPTION ADVISORIES

A COMPLEX PROBLEM

Some fish from the Detroit River contain high levels of mercury and PCBs, which can cause health problems. However, there are many uncertainties, for example, how contaminated are fish species that are not routinely tested? Are new or legacy pollution sources to blame? Where are the contaminant hot spots? Who is most at risk? Solutions will likely require novel approaches for both decreasing contaminant levels in the River and better communicating the risks to fish consumers.

A COLLABORATIVE RESEARCH PROCESS

In 2007, Michigan Sea Grant funded a research team to investigate the causes, consequences and correctives for fish consumption advisories of the Detroit River. The project was led by Donna Kashian, an ecotoxicologist at Wayne State University. The team included contaminant modelers from the University of Windsor and systems ecologists from the University of Toledo. Researchers conducted interviews and organized three workshops – involving 67 stakeholder groups, such as community health and fisheries professionals from U.S. and Canadian agencies – to help focus the project on the most important research questions.

USEFUL RESULTS AND TOOLS

FISH AND SEDIMENT DATASETS

Researchers gathered, reviewed and analyzed relevant data from the Detroit River, including contaminant measurements from fish, mussels, plankton, water and sediment from both Canadian and U.S. sources. The datasets are available on the project website.

The research results, stakeholder workshops and education tools are helping environmental professionals address the risks of fish contaminants. At the end of the project, evaluations showed that 86% of participants believed the project provided valuable scientific information and they reported making an average of three new professional connections as a result of the workshops.

"The project did a good job of narrowing down to the questions that really mattered... For example, we now have a much better idea about who is eating what from the Detroit River. It helps inform future ideas, thoughts and decisions."

Rose Ellison, U.S. EPA

"I definitely saw new partnerships develop... The project and funding allowed MDCH to dedicate more resources to Detroit River fish consumers than previously and increased our knowledge of the area and issues facing residents."

*Sue Manente,
Michigan Department of
Community Health (MDCH)*

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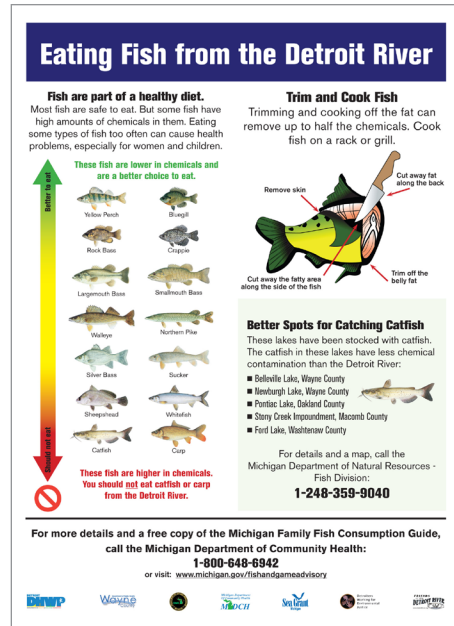
MODEL RESULTS

Researchers modified the Detroit River Fish Consumption Hazard Assessment Model to look at how PCBs move through the Detroit River food web and bioaccumulate in different species of fish. The model allows scientists to identify the factors creating differences in fish PCB levels and to evaluate potential remediation strategies. The report explains how the model is helping answer three key questions identified by stakeholders. A few of their findings are summarized here:

1) Are enough fish being collected and tested in order to generate trustworthy advisories?

Fish contaminant levels vary widely depending on the fish species and the location within the Detroit River. On the U.S. side, only five species of sport fish from two locations were tested over the past 10 years in sufficient numbers to provide a robust estimate of PCB levels. The well-tested fish species include yellow perch, walleye, sucker, carp and northern pike. Researchers recommend that more sport fish be tested from U.S. waters.

2) What are contaminant levels in fish species not currently tested?

Based on the average size, diet and habits of different fish species, the model predicted that bluegill, brown bullhead and largemouth bass should be relatively safe to eat, but channel catfish should be avoided all together. In general, bottom-feeding fish species

with more oil in their tissue, and larger fish tend to accumulate more PCBs.

3) Where are the biggest sources of fish contaminants in the Detroit River basin?

Results from the Hazard Assessment Model indicate that on the U.S. side of the Detroit River, 73 percent of PCBs in fish come from contaminated sediments, which provides a strong rationale for continued remediation of sediments. Historical industrial activity has left hotspots of PCBs in sediments, for example, in and around the Trenton Channel.

Although legacy pollution is the most significant source of fish contaminants, it is not the only culprit. Water flowing from Lake St. Clair contains some PCBs and the levels increase as water flows down the Detroit River,

consistently spiking in certain locations, such as just north of the Ambassador Bridge. Model simulations indicate that new PCB releases continue to enter the system in dissolved form and possibly as contaminated particles from several sources along the U.S. side of the Detroit River.

FISHING BEHAVIOR SURVEY RESULTS

A graduate student team from the University of Michigan interviewed anglers on the Detroit River to assess fishing habits and knowledge, attitudes and beliefs about fish contamination among people of different races and income levels. Their thesis explains the results, including the finding that people of color are more likely to eat high-risk fish species, such as catfish, from the Detroit River.

SIGNS AND BROCHURES

The researchers formed a diverse working group to improve communication about fish consumption for at-risk populations fishing along the Detroit River. Michigan Sea Grant outreach specialists helped develop compelling graphics to illustrate the risk associated with different fish species and to demonstrate the best way to prepare fish to reduce risk. The Michigan Department of Community Health and other partners are distributing new fliers about safe, fish-eating habits and alternate locations to catch catfish. Forty-four new signs have been posted in 24 communities along the River, where many anglers are low income and unlikely to use web-based advisories.

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