

SEA GRANT PROJECT FINAL REPORT

INSTITUTION: Purdue University

TITLE: Real-Time Online Access of Fish Consumption Advice

PROJECT STATUS: Completed

COMPLETION DATE: May 31, 2011

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RESULTS: We developed a software platform that will provide real-time, online access to advisories for consumption of recreationally-caught fish. The software platform will allow residents to access personalized fish consumption advice in real-time through the Internet. A database was created using MySQL and will be maintained on our existing server. Indiana Departmental of Environmental Management (IDEM) can upload new data but they do not have the authority to publish (release the data to residents). The Indiana State Department of Health (ISDH) staff has online access to the database through a front-end which allows them to upload/modify the advisory information. The ISDH has the authority to publish or release the updated advisory. End users can access the system through an online browser and select the elements for their customized report.

STATUS: The database was just made available to IDEM and ISDH. IDEM is checking the advisory information and updating with the most recent data. We are also providing support and fixing any software problems that are encountered. We are still working to improve the web page's appearance. The end user page can be viewed at <http://fn.cfs.purdue.edu/prodaai/main.xml>

BACKGROUND: The State of Indiana has been issuing fish consumption advisories for recreationally-caught fish for the past 3+ decades. These advisories are intended to protect residents from harmful exposure to environmental pollutants (e.g. mercury and polychlorinated biphenyls). Until recent years, the advisory was distributed as a 40-60 page booklet and 10,000 copies were intended to provide this information to 6 million Indiana residents. Not surprising, surveys have demonstrated that many residents/anglers are unaware of the State's advice. To create the advisory, the Indiana State Department of Environmental Management (IDEM) and the Indiana Department of Natural Resources (IDNR) collects approximately 200-300 fish samples from rivers, streams, lakes and reservoirs across the State each year. IDEM supervises the analysis of the samples and shares the results with the Indiana State Department of Health (ISDH). Each year the advisory is updated through the addition of new information to create an advisory that is a cumulative assessment of all data collected since the beginning of the program. The advisory that is produced by ISDH includes four tables which are organized by waterbody (i.e., streams and rivers; lakes and reservoirs; Lake Michigan and tributaries; and Ohio River) which makes for a lengthy format. The interval from collection of fish to release of a revised advisory can be as long as 2 years. Many have commented that the booklet is difficult to use since it combines advice for the general population and sensitive populations (i.e., pregnant or nursing women and young children) which requires referral to a couple tables for interpretation.

In 2000, our group at Purdue University started working with IDEM and ISDH to create a more user friendly advisory. We started by creating a website (<http://www.fish4health.net>) which has evolved over the past 10 years. Each year, we manually reorganize the State's advisory from a waterbody-based advisory into 92 county tables so that each table can fit on a single page for easier distribution by county health departments. From this information, we then create 92 tables which provided specific advice for sensitive populations and we further simplify the information to make it easier to interpret (<http://fn.cfs.purdue.edu/fish4health/indiana/index.html>). In addition, we translate the advisory

information into Spanish and produce another 92 county tables (<http://fn.cfs.purdue.edu/fish4health/indiana/indice.html>). The process of creating all of these tables takes several weeks and we will no longer be able to use internal resources to provide this service. We will continue to maintain our website which provides additional information to help sensitive populations make informed decisions about the commercial and recreationally-caught seafood that they consume. This includes information to help residents clean and prepare fish, identify the fish that they have caught, and understand the risks and benefits of eating fish.

The time and amount of effort that it takes us to reorganize the information provided by the State agencies each year is what we hope to eliminate through the production of this software platform. The ISDH has agreed to upload the new fish advisory information directly into our database. End users will then be able to download real-time, customized fish advisories (based upon: waterbody specific advice vs. county specific advice; general population advice vs. sensitive population advice; English, Spanish or Chinese languages; and body weight). Users will also gain access to the other resources that we provide on our website. In addition, we will make the software available for free to other State agencies that wish to use this platform. As more States use the platform, the information will be improved and the impact of this information on consumer knowledge, attitudes and behavior will improve.

Our group has consistently worked to improve fish consumption advisories for commercial and recreationally-caught fish through the following activities: (a number of these activities have been supported by IL-IN Sea Grant seed funds)

- developing rapid assays for measuring total mercury and PCBs (as Aroclors) in fish tissue and human blood
- evaluating semipermeable membrane devices (SPMDs) for predicting lipophilic contaminants in fish
- determining the effectiveness of using biopsy plugs as a non-lethal sampling method for measuring mercury in fish
- surveying the concentrations of pollutants and nutrients in commercial and recreationally-caught fish
- exploring the influence of cooking on pollutants
- measuring the impact of phytochemicals and food ingredients on mercury bioavailability
- using an animal model to measure the excretion of PCBs in milk following maternal dietary exposure
- developing predictive models for estimating the toxicity of dioxin-like PCBs, dioxins, and furans
- surveying women from limited-resource households to assess their knowledge, behavior and attitudes regarding healthful seafood consumption
- determining the impact of our educational materials on the knowledge, attitudes and behavior of healthcare professionals (RDs, RNs, MDs)

The activities completed here will allow us to translate our research findings into useful fish consumption advisories and help consumers, particularly sensitive populations, to make informed decisions concerning their seafood consumption. This project will increase the impact of regional fish consumption advisories for recreationally-caught fish and protect consumers. Once we have demonstrated the effectiveness of our approach in Indiana, we will seek further funding from EPA, USDA, FDA or Sea Grant to work with other States to adopt this platform.