

# Development, Validation and Dissemination of a Seafood Safety Wallet Card

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# Harvard Center for Risk Analysis

- “...if pregnant women were to ... replace fish high in mercury with fish low in mercury [and high in omega-3 fatty acids], cognitive development benefits [for babies]...could be achieved with virtually no nutritional losses.”

Harvard School of Public Health Press Release, 10/19/05

# Overview

- Evolution of IN Advisory
- Wallet card
  - Creation
  - Validation
  - Dissemination

# Evolution of IN Advisory – from 1998

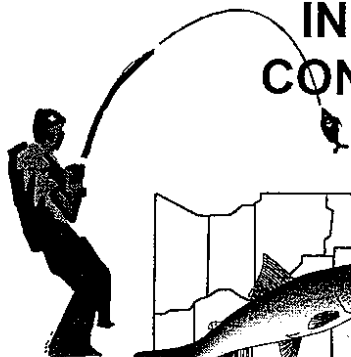
ISDH, IDEM, IDNR cooperate to collect and analyze recreationally-caught fish for contaminants

- 10,000 copies (~60 page booklet) printed annually – 6 million Indiana residents
- Advice for commercial fish not provided
- Nutritional advice not provided

# Evolution of IN Advisory – from 1998

- Advisory rather complex
- Advisory primarily distributed to anglers (~80% male)
- Advisory only published in English
- 38% of anglers were not using the Advisory because they were either unaware of the Advisory or they were aware but chose not to follow
- Impact of the Advisory was never measured

# 2001 INDIANA FISH CONSUMPTION ADVISORY



Indiana State  
Department of Health



Indiana  
Department of  
Environmental  
Management



Indiana  
Department of  
Natural Resources



Frank L. O' Bannon  
Governor

## 1998 STREAMS AND RIVERS ADVISORY

Location	Species	Fish Size (inches)	Contaminant	Group	
<b>St. Joseph River (Maumee River Basin)</b>					
<i>Allen County</i> <i>(Cont.)</i>	Rock Bass	7-9	■	3	
		9+	■	4	
<b>St. Joseph River (St. Joseph River Basin)</b>					
<i>Elkhart County</i>	Black Redhorse	13-17	○	2	
		17+	○	3	
	Channel Catfish	20-24	■	3	
		25-26	■	4	
		26+	■	5	
	Golden Redhorse	13-25	■	3	
		25+	■	4	
	Largemouth Bass	11-12	○	2	
		12+	○	3	
	Rock Bass	7-9	■	3	
		9+	■	4	
	Shorthead Redhorse	14-17	■○	3	
		17+	■○	4	
	Smallmouth Bass	9-13	○	2	
		13+	○	3	
	Walleye	16-17	○	3	
		17+	○	4	
	<i>St. Joseph County</i>	Black Redhorse	14-17	■○	3
			17+	■○	4
		Carp	20+	■○	5
		Channel Catfish	22+	■○	4
Golden Redhorse		13-22	■	3	
		22+	■	4	
Largemouth Bass		15-16	■○	3	
		16-18	■○	4	
		18+	■○	5	
Shorthead Redhorse		15-19	■○	3	
		19+	■○	4	
Smallmouth Bass		7-9	■○	2	
		9+	■○	3	
Quillback		18+	■	3	
White Sucker		14-16	■	3	
	16+	■	4		

○ = Mercury  
■ = PCBs

Group 2 = 1 meal/week  
Group 3 = 1 meal/month  
(Women and children see advisory groups on page10)

Group 4 = 1 meal/2 months  
Group 5 = DO NOT EAT

# Evolution of IN Advisory – from 1998

- Organized advisories by county (previously by waterbody)
- Reduced length of each County Advisory to single page (front & back) for sensitive populations only
- Provided for Spanish and for Kosher consumers
- Increased distribution to consumers and healthcare professionals (10k booklets to 160k wallet cards for same cost)
- Determined the impact of the FCA on sensitive populations



# Angling Indiana™

[Advisory Groups \(PDF\)](#)

[Group 5 Waterways](#)

[Indiana Surveys](#)

[Fishes of Indiana](#)

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Click on a County or select one below to view the local fish consumption advice.

[Presione acá para ver la versión en Español](#)

—Select a County—



GO



# Angling Indiana - 2009 FISH CONSUMPTION ADVISORY

## Tippecanoe County - advice for sensitive populations\*

Waterbody	Fish Species	Fish Length (inches)	Maximum Amount for Adults to Eat** (Meals)
All Indiana Rivers and Streams (unless specified)	<a href="#">Carp</a>	ALL	0
Elliot Ditch	ALL SPECIES	ALL	0
Middle Fork Wildcat Creek	<a href="#">Black Redhorse</a>	Up to 10	8 ounces per week (1 meal/week)
	<a href="#">Carp</a>	Up to 22	2 ounces per week (1 meal/month)
		22+	0
	<a href="#">Golden Redhorse</a>	Up to 10	8 ounces per week (1 meal/week)
South Fork Wildcat Creek	<a href="#">Black Redhorse</a>	13+	0
	<a href="#">Carp</a>	Up to 18	2 ounces per week (1 meal/month)
		18+	0
	<a href="#">Channel Catfish</a>	19+	0
	<a href="#">Creek Chub</a>	7+	0
	<a href="#">Golden Redhorse</a>	11+	0
	<a href="#">Longear Sunfish</a>	4+	0
	<a href="#">Rock Bass</a>	7+	0
	<a href="#">Smallmouth Bass</a>	10+	0
Wabash River (upstream of Lafayette)	<a href="#">White Sucker</a>	12+	0
	<a href="#">Blue Sucker</a>	21+	0
	<a href="#">Black Redhorse</a>	19+	0
	<a href="#">Channel Catfish</a>	15+	0
	<a href="#">Sauger</a>	13+	0
	<a href="#">Shorthead Redhorse</a>	15+	0
	<a href="#">Smallmouth Buffalo</a>	ALL	0
Wabash River (downstream of Lafayette)	<a href="#">Bighorn Buffalo</a>	18+	0



## Fish for Your Health™

Advice for pregnant or nursing women,  
women that will become pregnant, and  
children under 6 years of age



1. **Eat fish** – Health experts recommend that women eat 8-12 ounces/week (weight before cooking) of fish. Children, ages 2-6, should eat at least 2 ounces/week. As a reference, 3 ounces of fish is about the size of a deck of cards. Women that eat fish which contains omega-3 fatty acids (EPA & DHA) will pass these nutrients to their babies and support healthy brain and eye development.

**Best Choices:** Eating six ounces/week of the following fish provides the recommended amounts of healthy fats and will minimize your baby's exposure to pollutants: salmon (wild or farm-raised), rainbow trout (farm-raised), herring, mackerel (Atlantic, Jack, chub), sardine, shad (American), whitefish.

2. Before eating recreationally-caught fish, check our *Fish4Health* website below for your State's fish consumption advisory and avoid eating fish that is heavily contaminated with pollutants. If a fish that you caught is not listed in the advisory, then eat no more than 1 meal per month. If you are unsure about the safety of the fish that you caught, be safe - 'catch-and-release'.
3. Minimize your exposure to pollutants in commercial fish - follow the advice given below. (Ex: If you eat 4 ounces of albacore tuna, then don't eat any other fish from this category until the following week.)

Level of Mercury or PCBs**	Maximum Amount for Adults to Eat	Commercial Fish Species
Lowest	12 ounces per week (2 meals /week)	anchovy, butterfish, catfish (farm-raised), clam, cod, crab (Blue, King and Snow), crayfish (also called crawfish), croaker (Atlantic), flatfish (Flounder, Plaice, Sole), haddock, hake, <b>herring</b> , jacksmelt, lobster (spiny), <b>mackerel (Atlantic, Jack, chub)</b> , mullet, oyster (cooked), perch (ocean), pickerel, pollock, <b>rainbow trout (farm-raised)</b> , <b>shad (American)</b> , <b>salmon (wild or farm-raised)</b> , <b>sardine</b> , scallop, shrimp, squid, tilapia, tuna (Skipjack, Light, canned), <b>whitefish</b> , whiting <i>(bolded fish contain more of the healthy omega-3 fats)</i>
Moderate	4 ounces per week (1 meal/2 weeks)	bass (black), buffalo fish, carp, perch (freshwater), grouper, halibut, lobster (northern, Maine, Atlantic), mahi mahi (Dolphin-fish), Pompano (Florida), sablefish, sea trout (weakfish), scorpion fish, snapper, Spanish mackerel (S. Atlantic), tilefish (Atlantic), tuna (Albacore, Yellowfin, White, canned), white croaker (Pacific)
High	Do not eat	bass (striped)**, bluefish**, Chilean sea bass, jack (Amber, Crevalle), king mackerel, marlin, orange roughy, shark, Spanish mackerel (Gulf of Mexico), swordfish, tilefish (also called golden bass or golden snapper - Gulf of Mexico), tuna (all fresh or frozen), walleye (Great Lakes, Canada)

# Evaluation of Impact

- Expanded Food & Nutrition Education Program (EFNEP)
- 721 women of limited-resources (ages 18-49; 35% pregnant; 5% nursing) completed a pre/post-tests around a 30-50 minute one-on-one training
- 39% had not eaten fish in the past month
- 10% had eaten fish that is higher in mercury
- Only 7% had previously used the Indiana Advisory
- 79% planned to use the Advisory (after training)
- Participants understood the importance of: eating fish as part of a healthy diet; avoiding fish that are higher in pollutants; and selecting fish that are high in omega-3 fats

# Key Messages - Sensitive Population

- Why is fish important to eat
- How much fish to consume
- Commercial seafood to avoid
- Commercial seafood high in nutrients
- Pathogen safety
- Recreationally-caught fish safety advice
- Omega-3 fatty acid consumption advice

## Why Eat Fish?

Pregnant or nursing women who eat fish that is high in omega-3 fatty acids will pass these nutrients to their babies and support healthy brain and eye development.

## How Much Fish to Eat?

Health experts recommend that women eat 8-12 ounces/week and children (ages 2-6) eat 2 ounces/week. Three ounces of fish is about the size of a deck of cards.

## Before Eating Fish That You Catch

Check with your State's Health Department for a fish consumption advisory for locally caught fish and avoid eating highly contaminated fish. Visit our website.

## Do Not Eat Raw Fish

When pregnant, avoid eating raw oysters, raw fish (sushi) or refrigerated smoked fish. Do not feed raw fish to infants or children.

## Learn More

For more information please visit our website:

[www.fish4health.net](http://www.fish4health.net)

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# Fish for Your Health™



Advice for  
Pregnant or Nursing  
Women, Women Who  
May Become Pregnant  
& Children (2-6 years)

Advice for Pregnant or Nursing Women & Women Who May Become Pregnant

**Best Choices**  
Lowest in Mercury &  
Highest in Healthy Fats

anchovy  
herring  
mackerel (Atlantic, jack, chub)  
rainbow trout (farm raised)  
salmon (wild or farm raised)  
sardine  
shad (American)  
whitefish

Eating as little as 6 ounces  
per week of these fish<sup>out</sup>  
provides the recommended  
amount of healthy omega-3  
fatty acids.

**Lowest Mercury**  
12 ounces per week

catfish (farm raised)  
clam  
cod  
crab  
flatfish (flounder, plaice, sole)  
haddock  
herring  
mackerel (Atlantic, jack, chub)  
mullet  
oyster (cooked)  
pollock  
rainbow trout (farm raised)  
salmon (wild or farm raised)  
sardine  
scallop  
shrimp  
squid  
tilapia  
tuna (canned Skipjack or Light)  
whitefish

**Moderate Mercury**  
4 ounces per week

bass (saltwater, black)  
buffalo fish  
carp  
grouper  
halibut  
lobster(northern, Maine, Atlantic)  
mahimahi (Dolphin-fish)  
perch (freshwater)  
Pompano (Florida)  
sablefish  
sea trout (weakfish)  
snapper  
Spanish mackerel (S. Atlantic)  
tilefish (Atlantic)  
tuna (canned Albacore, Yellowfin,  
or White)  
white croaker (Pacific)

**High Mercury / PCB\***  
**Do Not Eat**

bass (striped)\*  
bluefish\*  
Chilean sea bass  
golden snapper  
jack (Amberjack, Crevalle)  
king mackerel  
marlin  
orange roughy  
sea lamprey  
shark  
Spanish mackerel (Gulf of Mexico)  
swordfish  
tilefish (Gulf of Mexico)  
tuna (all fresh or frozen)  
walleye (Great Lakes)

\*PCB (polychlorinated biphenyls) are  
higher in these species

Excessive mercury can pass through the placenta or mother's milk and harm your baby. Do not eat fish from the high mercury category. If you eat 4 ounces from the moderate category, don't eat any more fish from this category until the next week.

# Wallet Card Creation

- Seafood consumption recommendation - FDA/CFSAN, AHA, Dietary Guidelines Advisory Committee, NAS/FNB
- Hg limits - EPA's RfD
- Hg data – FDA/CFSAN, Purdue studies
- PCB limits - EPA's non-cancer endpoint
- PCB data - striped bass and bluefish from East Coast study
- Cooking recommendation - FDA/CFSAN
- Omega-3 fa's – USDA/ARS Nutrient Database

# Scientific Review

- Indiana State Agencies (IDEM, ISDH, CES)
- Sustainable Seafood Forum Advisors
- Great Lakes Cooperators
- Florida State Agency Cooperators (DEP, DoH, DoA)



# Safe Limits – Sensitive Population

Rate*	Mercury <sup>£</sup>	PCBs <sup>§</sup>
<u>(oz/wk)</u>	<u>(ppb)</u>	<u>(ppb)</u>
12	<120	<50
4	120-377	50-148
0	>378	>149

\*Fresh weight

<sup>£</sup>Hg intakes based upon: 60 Kg body weight (132 lb); RfD = 0.1 µg/kg bw-d

<sup>§</sup>PCBs intakes based upon: 60 Kg body weight (132 lb); 50% cooking loss;  
non-cancer endpoint = 0.02 µg/kg bw-d

# Dietary Recommendations

- National Academy of Sciences (NAS) - 2002
  - EPA + DHA = 140 mg/d (nursing/pregnant)
- Dietary Guidelines Advisory Committee Report - 2004
  - 8 oz fish/wk (EPA + DHA = 500 mg/d)
- American Heart Association (AHA)
  - 2 servings (2-3 oz per serving) of fatty fish/week



# Fish4Health.net

[YouTube Introduction](#)

[Wallet Card](#)

[iPhone Application](#)

[Mobile Websites](#)

- In English
- En Español

[Commercial Fish Advisories](#)

- In English
- En Español
- Kosher

[Risks from Contaminants](#)

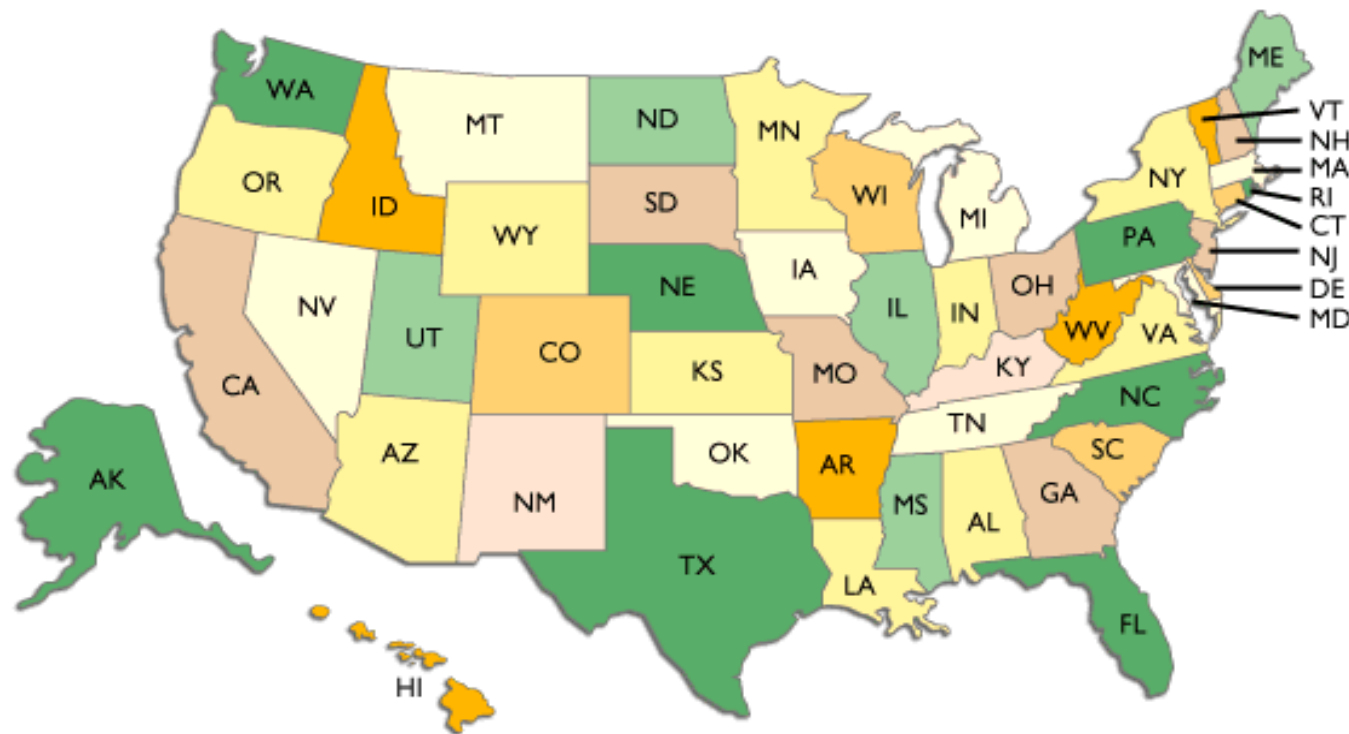
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[How to Clean Fish \(Video\)](#)

[Purdue Research](#)

[Contact Us](#)

Choose a State from the map or select one from the list to view local fish consumption advice.



--Choose a State--

53,433

Other Sites:



AquaNIC

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# Validation - Focus Group

Group included 9 women (18-37 yrs. of age)

From wallet card, women learned:

- that they should eat 8 oz of fish per wk (2 meals)
- that they should be cautious when eating recreationally-caught fish when pregnant/nursing
- that they should avoid raw fish when pregnant
- which fish are higher in n-3 fats
- which fish are higher in pollutants

Most women would use the wallet card

# Seafood Restaurant Survey (n=78)

1. From the wallet card, if you were pregnant, which would you be more likely to do?

36% - decrease your overall fish consumption

15% - increase your overall fish consumption

39% - not change your overall consumption of fish

8% - not sure

2. From the wallet card, if you were pregnant, which would you be more likely to do?

92% - decrease your consumption of fish that is higher in mercury

1% - increase your consumption of fish that is higher in mercury

6% - not change your overall fish consumption

0% - not sure

3. From the wallet card, if you were pregnant, which would you be more likely to do?

3% - decrease your consumption of fish that is higher in omega-3 “healthy” fats

77% - increase your consumption of fish that is higher in omega-3 “healthy” fats

18% - not change your overall consumption of fish

3% - not sure

# Dissemination Techniques

- Web sites
  - Fish4Health.net & AnglingIndiana
- iPhone & Mobile phone apps
- Handouts (1-page)
  - English, Spanish, Kosher
- Wallet cards
- YouTube and Podcast videos
- X-Train™
  - dietitians, nurses, teachers

# Dissemination Targets

- State Agencies/Functions
  - WIC Clinics
  - Sea Grant Programs (RI, TX, IL-IN)
  - Health Departments (IN, FL)
  - County Cooperative Extension Offices
- Ob/Gyn's, Pediatricians, RDs, Nurses
- Grocers, Seafood Restaurants and Vendors
- Aquarium (AoP)