



The Eat Safe Fish Program (ESF)

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Michigan Department of Health and Human Services

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Overview

- **Eat Safe Fish Program Goals**
- ***Eat Safe Fish (ESF) Guideline Process***
 - Sampling & Analysis
 - Data Evaluation
 - Setting guidelines and creating the *Eat Safe Fish Guide*
- **Outreach**
 - Materials and Community Fishing Events
 - River Walkers
 - Other outreach
- **Local Fish Consumption Guidelines**
 - Saginaw River
 - Tittabawassee River
 - Saginaw Bay
 - Lake Huron

Eat Safe Fish Program Goals

- To promote safer consumption of fish from Michigan waterbodies
- To create consumption guidelines based on the health risks of eating fish that contain environmental contaminants, like mercury, PCBs, and PFAS
- To provide Michiganders with the knowledge they need to make informed decisions about which fish and how much fish to eat



Fish Sample Collection

- Fish consumption advisories are based on chemical levels in edible portions of fish from Michigan waterbodies
- Fish are primarily collected by EGLE's Fish Contaminant Monitoring Program (FCMP), with assistance from:
 - DNR Fisheries Division
 - US Geological Survey
 - Community partners and Tribal governments
- After collection, fish are frozen until they can be processed by FCMP biologists



Fish Sample Processing

- During sample processing, FCMP biologists collect information like length and weight
- The edible portions of fish, usually the fillet, are then removed and sent to the MDHHS Laboratory
 - The edible portion is the most representative of exposure
- The MDHHS Laboratory blends each fillet into a paste, which is then tested for contaminants



Fish Sample Analysis

- The MDHHS Analytical Chemistry Lab can quantify concentrations of the following contaminants from fish tissue samples:
 - Mercury
 - PCBs and organochlorine pesticides (DDT/DDE/DDD, Chlordane)
 - Total dioxins, furans, and coplanar PCBs
 - Toxaphene
 - Selenium
 - PFAS (39 analytes including PFOS)
- Currently, all samples are tested for mercury and PFAS
 - Additional chemical analyses may be selected based on the location of the waterbody and the fish species

Fish Consumption Screening Values (FCSVs)

- Concentrations of chemicals from edible portions are compared to health-based screening values called FCSVs
 - FCSVs are based on toxicity values
 - EPA Reference Doses (RfDs)
 - ATSDR Minimal Risk Levels (MRLs)
 - FCSVs are protective against most sensitive toxicity endpoint (critical effect)
 - FCSVs include uncertainty factors to be health protective
 - [Michigan Fish Consumption Advisory Program Guidance](#): Appendix A
- ESF uses the 95% Upper Confidence Limit (95% UCL) of the arithmetic mean for comparison with FCSVs
 - Health-protective approach due to variability within fish populations

Table 1. Fish Consumption Screening Values (FSCV) for DDT plus metabolites, dioxin-like chemicals, mercury, PCBs, PFOS, selenium, and toxaphene.

Meal Category	DDT, DDE, DDD	Dioxins/Furans/co-planar PCBs	Mercury	PCBs
<i>meals per month</i>	$\mu\text{g/g (ppm)}^a$	$\text{pg TEQ/g (ppt-TEQ)}^b$	$\mu\text{g/g (ppm)}^a$	$\mu\text{g/g (ppm)}^a$
16	≤ 0.11	≤ 0.5	≤ 0.07	≤ 0.01
12	>0.11 to 0.15	>0.5 to 0.6	>0.07 to 0.09	>0.01 to 0.02
8	>0.15 to 0.23	>0.6 to 0.9	>0.09 to 0.13	>0.02 to 0.03
4	>0.23 to 0.45	>0.9 to 1.9	>0.13 to 0.27	>0.03 to 0.05
2	>0.45 to 0.91	>1.9 to 3.7	>0.27 to 0.53	>0.05 to 0.11
1	>0.91 to 1.8	>3.7 to 7.5	>0.53 to 1.1	>0.11 to 0.21
6 meals per year	>1.8 to 3.7	>7.5 to 15	>1.1 to 2.2	>0.21 to 0.43
Limited	>3.7 to 20	>15 to 90	NA	>0.43 to 2.7
Do Not Eat	>20	>90	>2.2	>2.7

Meal Category	PFOS	Selenium	Total Toxaphene	Toxaphene Parlars 26, 50, 62 ($\Sigma 3\text{PC}_{26,50,62}$)
<i>meals per month</i>	$\mu\text{g/g (ppm)}^a$	$\mu\text{g/g (ppm)}^a$	$\mu\text{g/g (ppm)}^a$	$\mu\text{g/g (ppm)}^a$
16	≤ 0.009	≤ 2.3	≤ 0.02	≤ 0.001
12	>0.009 to 0.013	>2.3 to 3.1	>0.02 to 0.03	>0.001 to 0.002
8	>0.013 to 0.019	>3.1 to 4.6	>0.03 to 0.05	>0.002 to 0.003
4	>0.019 to 0.038	>4.6 to 9.2	>0.05 to 0.09	>0.003 to 0.006
2	>0.038 to 0.075	>9.2 to 17	>0.09 to 0.18	>0.006 to 0.011
1	>0.075 to 0.15	NA	>0.18 to 0.36	>0.011 to 0.023
6 meals per year	>0.15 to 0.3	NA	>0.36 to 0.73	>0.023 to 0.046
Limited	NA	NA	>0.73 to 4.5	>0.046 to 0.28
Do Not Eat	>0.3	>17	>4.5	>0.28

^a: micrograms of chemical per gram of wet weight fish tissue ($\mu\text{g/g}$) that is the same as parts per million (ppm).

^b: picograms of toxic equivalents calculated according to US EPA methods⁷ per gram of wet weight fish tissue (pg TEQ/g) that is the same as parts per trillion of toxic equivalents (ppt-TEQ).

Reading the *Eat Safe Fish Guide*

- Guidelines are organized by county, waterbody, and species
- Each county has a map showing waterbodies that have specific guidelines
- The chemical driving the guideline is listed, along with the size of fish (if applicable), and consumption guideline

Bay County

Map of Bay County, Michigan

Filets of fish from the lakes and rivers listed here have been tested for chemicals.

For all other lakes and rivers in this county, and for any species not listed below, see page 9.

† Bluegill, yellow perch, and other panfish are often a Best Choice. See page 9 for guidelines if these fish aren't listed below.

Kawkawlin River

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Limited [▲]
Northern Pike	PCBs	Any	Limited [▲]

When fishing the river near Saginaw Bay, use the Saginaw Bay guidelines below.

Saginaw Bay

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs & Dioxins	Any	Do Not Eat [▲]
Catfish	Dioxins	Any	Limited [▲]
Freshwater Drum	Mercury	Any	1

(continued on the next page)

* See page 6
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▲ See page 7
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2x See page 8

Best Choice! = †

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Special Guidelines

- **2x guidelines** are based on chemicals like PCBs and dioxins that build up in fat and skin
- They can be doubled if the **3Cs (Choose, Clean, Cook)** are followed:
 - **Choose** fish lower in chemicals
 - **Clean** the fish by removing the skin and cutting off the fat
 - **Cook** the filet on a grate and so that more fat in the filet can drip away while it is cooking
- These techniques can remove up to half of these chemicals from your meal
 - Mercury and PFOS primarily build up in the filet, so these techniques do not remove as much of those chemicals and the 2x rule cannot be applied
- **Length Breaks**
 - Concentrations in some fish are correlated with length
 - If a trend is present, different guidelines may be issued for fish of different sizes

Meal Categories

- **Limited**

- Some populations should avoid fish with a Limited guideline
 - People who may have children in the next several years, are currently pregnant, or are breastfeeding
 - People with pre-existing health conditions like cancer or heart disease
 - Children under age 15
- All others should limit consumption of Limited fish to 1 or 2 meals per year

- **Do Not Eat**

- All populations should avoid fish with a Do Not Eat guideline
- Even one meal of fish with a Do Not Eat can raise your risk of harmful health effects

What does a guideline 'mean'?

- Consuming more fish than the ESF Guideline does not mean that you are guaranteed to experience a harmful health effect
- If a guideline is 8 Servings Per Month, consuming more than 8 Servings Per Month of that fish **may** raise your risk of some harmful health effect
- The goal is to minimize **risk**, since everyone responds to chemicals differently

Statewide Safe Fish Guidelines

Statewide Safe Fish Guidelines

Michigan Department of Health and Human Services



- Michigan is lucky to have over 11,000 lakes, rivers, and streams. Because of that huge number, it is not possible to test every fish species from every lake, river, or stream in the state.
- These general guidelines are based on the typical amount of chemicals found in fish filets tested from around the state. Some fish may be higher or lower.
- If any of these fish are listed in the *Eat Safe Fish Guide* for the lake or river you are fishing in, use those guidelines instead of the Statewide Safe Fish Guidelines. The *MI Servings* recommendation will be more exact for that lake or river because those filets have been tested.
- These general guidelines can be used for lakes, rivers, and fish species not included in the *Eat Safe Fish Guide*.

To get a free copy of the *Eat Safe Fish Guide*, visit Michigan.gov/EatSafeFish or call 800-648-6942.



Use the Statewide Safe Fish Guidelines ONLY if:



- your lake or river is not listed in the *Eat Safe Fish Guide*, OR
- your lake or river is listed in the *Eat Safe Fish Guide*, but the fish species is not listed.

Type of Fish	Chemical of Concern	Size of Fish (length in inches)	MI Servings per Month*
Black Crappie	Mercury	Any Size	4
Bluegill	Mercury	Any Size	8
Brown Trout	Mercury	Any Size	4
Bullhead	Mercury	Any Size	4
Carp	PCBs	Any Size	2
Catfish	PCBs & Mercury	Any Size	4
Largemouth Bass	Mercury	Under 18"	2
		Over 18"	1
Muskellunge (Muskie)	Mercury	Any Size	1
Northern Pike	Mercury	Under 30"	2
		Over 30"	1
Rock Bass	Mercury	Any Size	4
Smallmouth Bass	Mercury	Under 18"	2
		Over 18"	1
Suckers	Mercury	Any Size	8
Sunfish	Mercury	Any Size	8
Walleye	Mercury	Under 20"	2
		Over 20"	1
White Crappie	Mercury	Any Size	4
Yellow Perch	Mercury	Any Size	4

*See page 2 to learn about *MI Servings*

Eat Safe Fish Outreach

- *Eat Safe Fish Guide*, Eat Safe Fish Brochure, and other printed materials
- Signage for waterbodies with Do Not Eat advisories
- Press releases and interviews with state and local news
- Attendance at fishing events
 - Kids' fishing tournaments
 - Fish fry/fish boils
 - Fishing-related festivals

Eat Safe Fish Outreach – River Walkers

- Seasonal employees who work to spread Eat Safe Fish information and messaging through in-person conversations with anglers
- Four River Walker programs have been established so far:
 - Saginaw Bay Area
 - Detroit River
 - Huron River Watershed
 - Kalamazoo River Watershed
- Across the four programs, River Walkers talk with thousands of anglers each year.



Other Outreach

- Eat Safe Fish Ambassador (Detroit)
 - Create sustainable sources of information about safe fish consumption in the Detroit area.
- Eat Safe Fish Community Outreach Educator (Statewide)
 - Attend community events and conduct non-traditional outreach related to safe fish consumption, primarily in environmental justice communities.

How to Find Data

- [Michigan.gov/eatsafefish](https://michigan.gov/eatsafefish)
- Reports and Science
- [Southeast Michigan 2](#) (Saginaw River, Tittabawassee River)
- [Great Lakes & Binational Waters \(michigan.gov\)](#) (Lake Huron, Saginaw Bay)

ESF Guidelines for the Saginaw River

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Bluegill	PFOS	Any	4
Carp	PCBs & Dioxins	Any	Do Not Eat [▲]
Catfish	Dioxins	Any	Do Not Eat [▲]
Largemouth Bass	PFOS, PCBs, & Mercury	Under 18"	2
	Mercury	Over 18"	1
Smallmouth Bass	PFOS, PCBs, & Mercury	Under 18"	2
	Mercury	Over 18"	1
Sunfish	PFOS	Any	4
Walleye	Dioxins	Any	6 Per Year ^{2x}
White (Silver) Bass	PCBs & Dioxins	Any	Do Not Eat [▲]
Yellow Perch	Dioxins	Any	2 ^{2x}
All Other Species	PCBs & Dioxins	Any	6 Per Year ^{2x}

PFOS can't be reduced by trimming and cooking. Do not double MI Servings.

ESF Guidelines for the Tittabawassee River

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs & Dioxins	Any	Do Not Eat [▲]
Catfish	Dioxins	Any	Do Not Eat [▲]
Largemouth Bass	PCBs & Dioxins	Under 18"	6 Per Year ^{2x}
		Over 18"	Limited [▲]
Smallmouth Bass	PCBs & Dioxins	Under 18"	6 Per Year ^{2x}
		Over 18"	Limited [▲]
Suckers	PCBs	Any	6 Per Year ^{2x}
Walleye	Dioxins	Any	6 Per Year ^{2x}
White (Silver) Bass	PCBs & Dioxins	Any	Do Not Eat [▲]
Yellow Perch	Dioxins	Any	2 ^{2x}
All Other Species	PCBs & Dioxins	Any	6 Per Year ^{2x}

ESF Guidelines for Saginaw Bay

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs & Dioxins	Any	Do Not Eat [▲]
Catfish	Dioxins	Any	Limited [▲]
Freshwater Drum	Mercury	Any	1
Lake Trout	PCBs & Dioxins	Under 20"	1 ^{2x}
	PCBs	20" to 24"	6 Per Year ^{2x}
		Over 24"	Limited [▲]
Walleye	Dioxins	Any	6 Per Year ^{2x}
White (Silver) Bass	PCBs & Dioxins	Any	Do Not Eat [▲]
Yellow Perch	Dioxins	Any	2 ^{2x}
All Other Species	PCBs & Dioxins	Any	6 Per Year ^{2x}

ESF Guidelines for Lake Huron

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Atlantic Salmon	Dioxins	Any	2 ^{2x}
Brown Trout	PCBs	Any	6 Per Year ^{2x}
Carp	PCBs & Dioxins	Any	Do Not Eat [▲]
Catfish	Dioxins	Any	Limited [▲]
Chinook Salmon	PCBs	Any	6 Per Year ^{2x}
Coho Salmon	PCBs	Any	6 Per Year ^{2x}
Freshwater Drum	Mercury	Any	1
Lake Trout	PCBs & Dioxins	Under 20"	1 ^{2x}
	PCBs	20" to 24"	6 Per Year ^{2x}
		Over 24"	Limited [▲]
Lake Whitefish	Dioxins	Any	6 Per Year ^{2x}
Northern Pike	PCBs	Any	1 ^{2x}
Rainbow Trout	PCBs	Any	6 Per Year ^{2x}
Smelt	PFOS	Any	6 Per Year
Steelhead	PCBs	Any	6 Per Year ^{2x}
Suckers	PCBs	Any	2 ^{2x}
Walleye	Dioxins	Any	6 Per Year ^{2x}
White (Silver) Bass	PCBs & Dioxins	Any	Limited [▲]
White Perch	PCBs	Any	6 Per Year ^{2x}
Yellow Perch	Dioxins	Any	2 ^{2x}

PFOS can't be reduced by trimming and cooking. Do not double MI Servings.

Thank you!

For more information on the Eat Safe Fish program, please visit michigan.gov/eatsafefish