



What are 'safe' fish?

Safe fish are fish that are low in chemicals. If you use the MDHHS **Eat Safe Fish Guide** for your region when you choose fish to catch and eat, you will protect yourself and your family from chemicals that could someday make you sick.

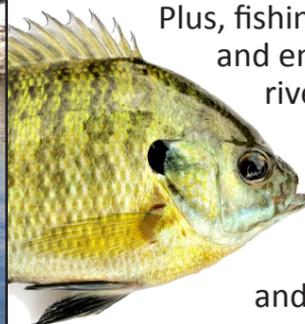
If there are chemicals in the fish, why should I still eat it?

Fish have a lot of great health benefits!

- ☑ Fish can be a great low-fat source of protein.
- ☑ Fish are brain food.
- ☑ Some fish have heart-healthy omega-3s.



Plus, fishing is a fun way to get outside and enjoy Michigan's 11,000 lakes, rivers, and streams!



If you follow the 3Cs and go after fish that have **fewer chemicals** in them, you can get a lot of health benefits and have **very little risk**.

Catching fish • Buying fish • Eating fish

For more information on safe fish, call MDHHS at 1-800-648-6942 or visit us online at www.michigan.gov/eatsafefish.



Areas of Concern (AOCs)

In the 1980s, the United States and Canadian governments identified 43 places in the Great Lakes region that had severe, long-term environmental problems. These places are called *Areas of Concern* or *AOCs*. Michigan originally had 14 AOCs located in both the upper and lower peninsulas.

People in federal, state, and provincial governments are working to address the problems in these areas. Local groups, known as Public Advisory Councils (PAC), also work on these environmental problems.

Beneficial Use Impairments (BUIs)

These environmental problems are called *beneficial use impairments* or *BUIs*. There were 14 categories of BUIs named in the U.S.-Canadian Great Lakes Water Quality Agreement. However, a place does not have to have all 14 problems to be called an AOC.

Each BUI has goals that need to be met in order to be removed from the AOC's list of problems. Once all BUIs are removed from the list, the AOC is considered to be no longer impaired and can be *delisted*, or removed from the list of AOCs.

The Goal: Delisting & a Healthy Environment

Once all of the assigned BUIs have been removed from an AOC, the PAC and Michigan Department of Environmental Quality submit a petition to the U.S. Environmental Protection Agency requesting it be removed from the list of AOCs. This is called "delisting." Two of Michigan's 14 original AOCs were delisted in 2014. Others are closer to delisting thanks to the dedication of the local, state, and federal stakeholders working to improve our environment, along with funding from the U.S. Environmental Protection Agency and the Great Lakes Restoration Initiative.

You can get involved!

Would you like to volunteer with the Muskegon Lake AOC Public Advisory Council? Contact the Michigan Department of Environmental Quality's Office of the Great Lakes for more information at 1-517-284-5035.

The 14 BUIs that an AOC can have are:

- Restrictions on Fish and Wildlife Consumption
- Tainting of Fish and Wildlife Flavor
- Fish Tumors or Other Deformities
- Degraded Fish and Wildlife Populations
- Loss of Fish and Wildlife Habitat
- Bird or Animal Deformities or Reproductive Problems
- Degradation of Phytoplankton and Zooplankton Populations
- Degradation of Benthos
- Degradation of Aesthetics
- Eutrophication or Undesirable Algae
- Beach Closings
- Added Costs to Agriculture or Industry
- Restrictions on Dredging Activities
- Restrictions on Drinking Water Consumption or Taste and Odor Problems



FREE LOCAL FISHING MAP & the MDHHS Safe Fish Guidelines

eat safe fish in Muskegon County



www.michigan.gov/eatsafefish

Here's your map & the local Eat Safe Fish guidelines, too!

This flyer lists all the lakes and rivers in Muskegon County that have had filets of fish tested for chemicals.

To get the *Eat Safe Fish Guides* for other areas, please call MDHHS at 1-800-648-6942 or visit www.michigan.gov/eatsafefish.

Photo Credits: Kathy Evans (Muskegon, MI)

Get to know the 3Cs

Choose, Clean, Cook

By choosing the right fish and then cleaning and cooking it the right way, you can reduce some of the chemicals in the fish by nearly half!

1 Choose

Some fish contain chemicals that can harm your health. MDHHS tests filets of fish taken from Michigan's lakes and rivers to learn which fish are safer to eat. The **Eat Safe Fish Guides** make it easy to find out which fish have been tested and easy to choose fish that are safe to eat.

The Eat Safe Fish Guide:

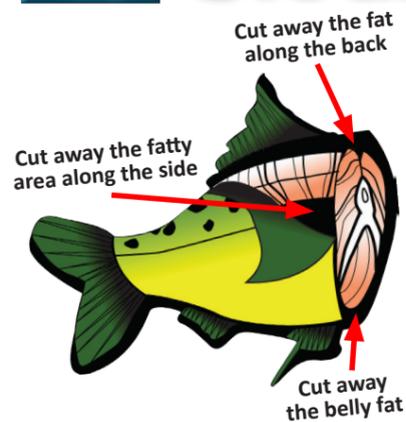
- lists fish species that have had filets tested for chemicals by MDHHS.
- protects people who eat Michigan fish often.
- protects anyone who has health problems, is young, is pregnant, or is planning on having children in the future.



Other lakes and rivers have been tested in Muskegon County. You can find these guidelines on the flyer in the back of this brochure. To get the guidelines for other areas, visit www.michigan.gov/eatsafefish or call 1-800-648-6942.

2 Clean

Some chemicals, like PCBs and dioxins, collect in the fat of the fish.



- When cleaning the fish, trim away any of the fat you can see.
- Remove and throw away the organs, too.

Careful cleaning and cooking can get rid of up to half of these chemicals from the fish.

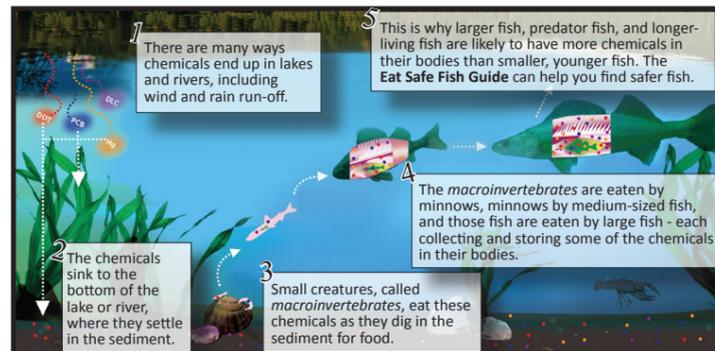
3 Cook



- Poke holes in the skin or remove it completely so that more fat can drip away from the fish filet as it cooks.
- Cook your fish on a grill or on a broiler pan in the oven. More of the fat and chemicals left behind can now drip away from the fish through the grates.
- If you choose to fry your fish, it's best to pan fry and throw away the oil. Please note that frying does not get rid of any of the chemicals that may be in the fish.

You can't remove mercury or PFOS from fish by cleaning and cooking. Always choose your fish wisely!

Why are there chemicals in some fish?



- PCBs, dioxins, and mercury are the most common chemicals found in filets of Michigan fish.
- These chemicals are *persistent* and *bioaccumulative*. This means the chemicals not only stay in the environment, they also build up in living things.
- Because of this, they have become part of the food chain for fish, as you can see in the picture above.
- Some chemicals, like PCBs and dioxins, build up in the fat of the fish. Mercury and PFOS build up in the muscle, or filet, of the fish.
- If you choose fish lower in mercury and PFOS and follow the 3Cs, you can keep these chemicals from building up in your body, too.
- You can't see or taste these chemicals. They do not change how clear or dirty the water looks. The only way to know if these chemicals are in the fish is by testing for them in a laboratory.



Muskegon Co. Eat Safe Fish Guidelines

These guidelines are from the 2015 *Southwest Michigan Eat Safe Fish Guide*. To get the most up-to-date guidelines for lakes and rivers in Muskegon County or other areas of Michigan, please visit www.michigan.gov/eatsafefish to download the *Eat Safe Fish Guides* to your smartphone or call 1-800-648-6942 to get a print copy!

Bear Lake

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Do Not Eat [▲]
Largemouth Bass	PCBs	Any	6 Per Year ^{2x}
Northern Pike	PCBs & Mercury	Any	2
Smallmouth Bass	PCBs	Any	6 Per Year ^{2x}
Walleye	Mercury	Under 18"	4
		18" to 22"	6 Per Year ^{2x}
		Over 22"	Limited [▲]
All Other Species	PCBs	Any	6 Per Year ^{2x}

Big Blue Lake

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Largemouth Bass	Mercury	Under 16"	2
		Over 16"	1
Smallmouth Bass	Mercury	Under 16"	2
		Over 16"	1

Black Creek

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Limited [▲]
Suckers	PCBs	Any	6 Per Year ^{2x}

Mona Lake

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	DDT PCBs	Under 18"	2 ^{2x}
		18" to 28"	6 Per Year ^{2x}
		Over 28"	Limited [▲]
Largemouth Bass	PCBs	Any	6 Per Year ^{2x}
Smallmouth Bass	PCBs	Any	6 Per Year ^{2x}
Walleye	PCBs	Under 20"	1 ^{2x}
		Over 20"	6 Per Year ^{2x}
All Other Species	PCBs	Any	6 Per Year ^{2x}

Muskegon Lake

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Do Not Eat [▲]
Largemouth Bass	PCBs	Any	6 Per Year ^{2x}
Northern Pike	PCBs & Mercury	Any	2
Smallmouth Bass	PCBs	Any	6 Per Year ^{2x}
Walleye	Mercury	Under 18"	4
		18" to 22"	6 Per Year ^{2x}
		Over 22"	Limited [▲]
All Other Species	PCBs	Any	6 Per Year ^{2x}

Muskegon River

(downstream from Croton Dam in Newaygo Co.)

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Suckers	Mercury	Any	2
Walleye	PCBs	Any	6 Per Year ^{2x}

Ruddiman Creek Lagoon

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Do Not Eat [▲]
Largemouth Bass	PCBs	Any	1 ^{2x}
Smallmouth Bass	PCBs	Any	1 ^{2x}
All Other Species	PCBs	Any	6 Per Year ^{2x}

White Lake

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Carp	PCBs	Any	Limited [▲]
Largemouth Bass	Mercury	Under 18"	2
		Over 18"	1
Northern Pike	PCBs & Mercury	Any	2
Smallmouth Bass	Mercury	Under 18"	2
		Over 18"	1
Suckers	PCBs	Any	1 ^{2x}
Walleye	PCBs	Any	6 Per Year ^{2x}

For all other lakes and rivers in Muskegon County, please use the Statewide Safe Fish Guidelines found on the other side of this brochure.

Please see the other side of this brochure for the Lake Michigan guidelines.

- 2x** See the **2x** box on the back of this page to learn how you can eat more of these fish safely.
- ▲** See the **Limited** and **Do Not Eat** boxes on the back of this page for more information.



To get the full *Eat Safe Fish Guides* with guidelines for other counties and regions in Michigan, please visit www.michigan.gov/eatsafefish or call MDHHS at 1-800-648-6942.

Using the Eat Safe Fish Guidelines
MDHHS tests only the filets of the fish for chemicals to set these guidelines. *MI Servings* are set to be safe for everyone. This includes **children, pregnant or breastfeeding women, and people who have health problems like cancer or diabetes.**

How much is MI Serving?

Weight of Person	MI Serving Size
45 pounds	2 ounces
90 pounds	4 ounces
180 pounds	8 ounces

For every 20 pounds less than the weight listed in the table, subtract 1 ounce of fish.
For example, a 70-pound child's MI Serving size is 3 ounces of fish.
90 pounds = 20 pounds + 4 ounces = 1 ounce = a MI Serving size of 3 ounces

For every 20 pounds more than the weight listed in the table, add 1 ounce of fish.
For example, a 110-pound person's MI Serving size is 5 ounces of fish.
90 pounds + 20 pounds = 110 pounds / 4 ounces plus 1 ounce = a MI Serving size of 5 ounces

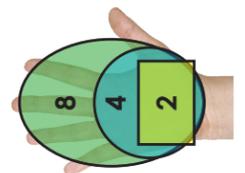
You might eat more than one *MI Serving* in a meal. That's OK, just keep track so you don't have too much.

Are you pregnant?

Fish is good for you and your baby! Use your pre-pregnancy weight to find your *MI Serving* size. It's also best to avoid eating fish labeled as "limited" when you're pregnant or breastfeeding.

My Michigan, MI Serving Size

- 8 ounces of fish = size of an adult's hand (large oval)
- 4 ounces of fish = size of the palm of an adult's hand (small circle)
- 2 ounces of fish = size of half a palm of an adult's hand (rectangle)



The MDHHS guidelines in this brochure are from the MDHHS 2015 *Eat Safe Fish Guide*. For updates, visit www.michigan.gov/eatsafefish or call 1-800-648-6942 and ask for a free *Guide*.

Restoring Muskegon Lake

The Muskegon Lake Watershed Partnership has been working with the U.S. Environmental Protection Agency and Michigan Department of Environmental Quality to do projects around Muskegon Lake that help to improve the local environment for people, animals, and fish! To learn more about the work that was done, please contact the Muskegon Lake Watershed Partnership at (231) 722-7878 x17.

Heritage Landing

(Located at the end of 7th Street on Muskegon Lake)
Heritage Park is the summer hotspot for music festivals. However, a visit on most days offers a peaceful and unobstructed view of Muskegon Lake, as well as some great shoreline fishing!

You are likely to catch some tasty panfish in the areas just offshore. Heritage Lansing is great for a family fishing outing and also offers plenty of handicap accessible areas.

Muskegon Nature Preserve

(Located on the east side of Muskegon Lake)
The Wilder River Walk links to the Muskegon Lake Shore trail and has 7 fishing platforms along the Muskegon River.

Recent work to control an invasive reed - phragmites - over eight acres of wetland in the Preserve will provide better fish and wildlife habitat for the future as native plant species return to the wetlands.

Catching fish • Buying fish • Eating fish
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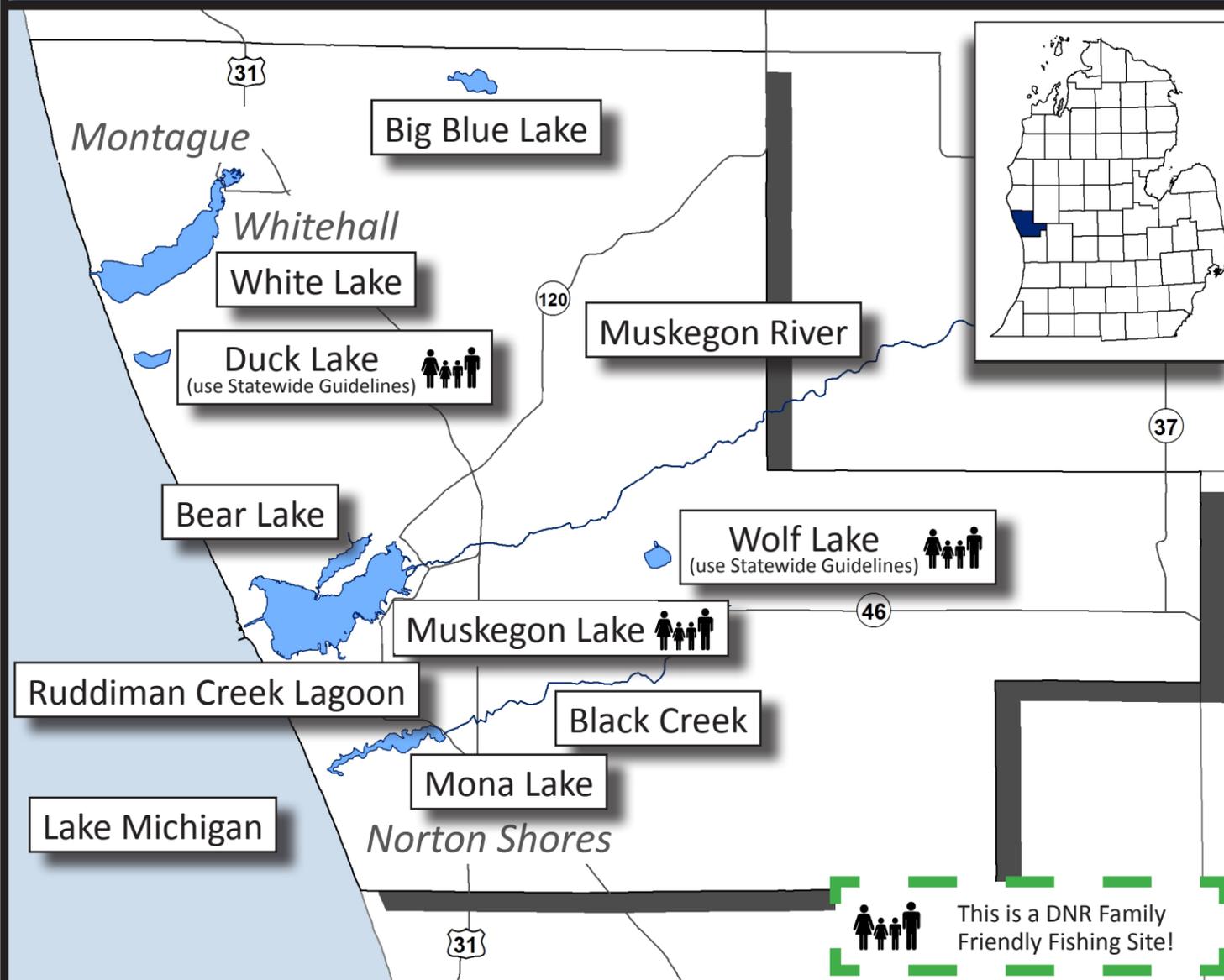


Map & 2015 Eat Safe Fish Guidelines for Muskegon County



Map of Muskegon County, MI

Check the 2015 Eat Safe Fish Guidelines on the inside of this brochure for the lakes and rivers on this map. For all other lakes and rivers in Muskegon County, please use the Statewide Guidelines.



Lake Michigan

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Brown Trout	PCBs	Any	Limited [▲]
Burbot	PCBs	Any	1 ^{2x}
Carp	PCBs	Any	Do Not Eat [▲]
Chinook Salmon	PCBs	Any	6 Per Year ^{2x}
Coho Salmon	PCBs	Any	1 ^{2x}
Lake Trout	Dioxins	Under 24"	6 Per Year ^{2x}
		Over 24"	Limited [▲]
Lake Whitefish	PCBs & Dioxins	Any	Limited [▲]
Rainbow Trout	PCBs	Under 20"	2 ^{2x}
		Over 20"	6 Per Year ^{2x}
Smelt	PCBs	Any	2 ^{2x}

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
Steelhead	PCBs	Under 20"	2 ^{2x}
		Over 20"	6 Per Year ^{2x}
Suckers	PCBs	Any	6 Per Year ^{2x}
Walleye	PCBs & Mercury	Under 18"	2
	PCBs	18" to 22"	6 Per Year ^{2x}
	PCBs	Over 22"	Limited [▲]
Yellow Perch	PCBs	Under 10"	4 ^{2x}
	PCBs & Mercury	Over 10"	4

Please see the other side of this brochure for the guidelines for other Muskegon lakes and rivers that have been tested.

Statewide Guidelines & More

Don't see a certain Muskegon County lake or river listed in this brochure? Then the Statewide Safe Fish Guidelines can help you find safer fish to eat.

Only use the Statewide Guidelines if...



- the Muskegon County lake or river you are fishing in is not listed in this brochure, OR
- your lake or river is listed in this brochure, but the fish species is not listed.

Statewide Safe Fish Guidelines

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
Carp	PCBs	Any Size	2
Catfish	PCBs & Mercury	Any Size	4
Largemouth Bass	Mercury	Under 18"	2
		Over 18"	1
Muskellunge	Mercury	Any Size	1
Northern Pike	Mercury	Under 30"	2
		Over 30"	1

Type of Fish	Chemical of Concern	Size of Fish (length in inches)	MI Servings per Month*
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

These 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 guidelines for the lake or river you are fishing in, use **those** guidelines instead of the Statewide Guidelines. The *MI Servings* recommendation will be more exact for that lake or river because those filets have been tested. For other counties in Michigan, please visit www.michigan.gov/eatsafefish to get the *Eat Safe Fish Guide* for that region.

2x, Best Choice, Limited, and Do Not Eat

Remove the fat; double the *MI Servings*!

PCBs and dioxins are in the fat of the fish. You can double the number of *MI Servings* if you:

- trim away the fat that you can see from the filet,
- cook the fish on a grill or broiling pan so more fat can drip away
- **Note, you can't remove mercury, selenium, or PFOS from the fish.** Do not double the *MI Servings* for fish with those chemicals listed as a Chemical of Concern.



2x

If you:

- are under the age of 15,
- have health problems, like cancer or diabetes,
- are planning on having children in the next several years, currently pregnant, or breastfeeding,

MDHHS suggests you **avoid eating all fish listed as "Limited"** because of higher levels of chemicals.

If **NONE** of the above apply to you, it is usually OK to eat fish listed as "**Limited**" **1 or 2 times each year.**



Limited

Do you eat fish at least twice a week?

When using the MDHHS *Eat Safe Fish Guide*, watch for this MDHHS "Best Choice" symbol. The hook and fish mark species that you and your family can safely eat 8 *MI Servings* or more each month!



Best Choice

No one should eat fish listed as Do Not Eat, regardless of age or health.

When these fish were tested, MDHHS found **very high** levels of chemicals. Eating even one meal of these fish could possibly lead to health problems in the future, regardless of age or health.



Do Not Eat