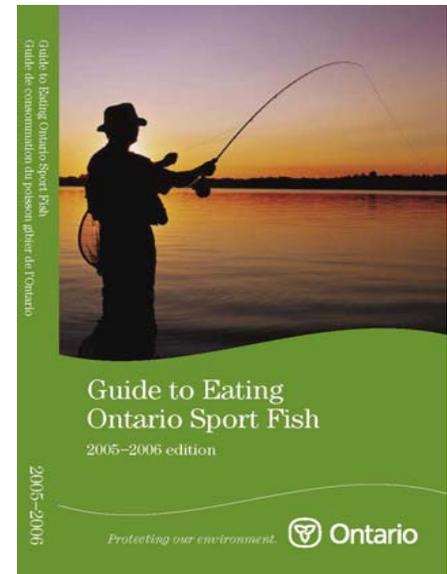


Sport Fish Consumption Advisories in Ontario

***Alan Hayton
Environmental Monitoring and
Reporting Branch (EMRB)
Ontario Ministry of the Environment***

Presentation to the Binational Toxics
Strategy Mercury Workgroup Meeting
17 May 2005



Presentation outline

Historical overview of sport fish consumption advisories in Ontario 1970-2005

Risk Assessment methods

- **Historical changes**
- **Health Canada guidelines**
- **Derivation of advisory tables**
- **Incorporating seafood consumption into risk assessment**

Risk Communication

Trends in mercury concentrations in Great Lakes sport fish

Overview

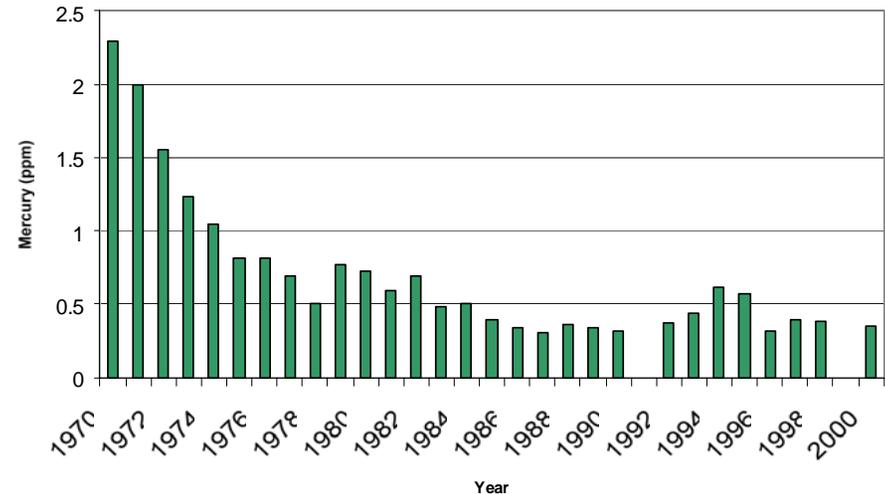
1970 - Fish contaminant monitoring started to address Hg problem in St. Clair River

1977 - Guide to Eating Ontario Sport Fish first published

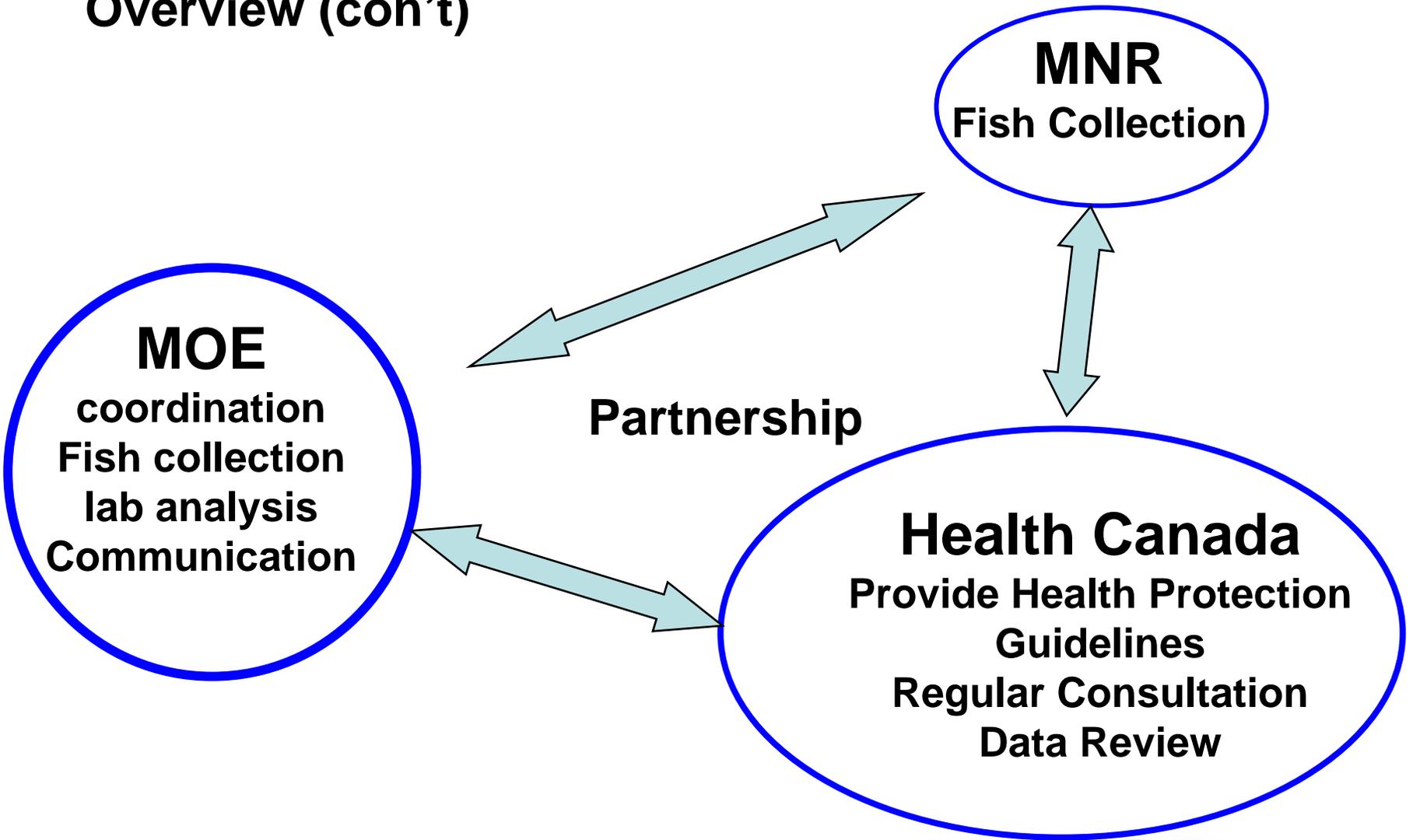
2005 - Guide produced biennially

- 350,000 copies/issue
- advice on 1700+ locations (Great Lakes and interconnecting channels and inland lakes and rivers)

Mercury Levels in Walleye from Lake St. Clair (1970-2000)



Overview (con't)



Risk Assessment Methodology

Use Health Canada health protection guidelines (tolerable daily intakes <TDIs>) (analogous to “reference dose”)

Methylmercury

Sensitive population - 0.2ug/kg bw/day

General population – 0.47 ug/kg bw/day

Historical Changes to mercury guideline

1977 – combination of “Maximum Residue Limit” of 0.5 ppm that is applied to commercial fish in Canada and our own depuration model

~1992 – Health Canada/WHO TDI of 0.47 ug/kg bw/day for all with conservative limits based on our old depuration model.

1998 – Dual guideline currently in use

Risk Assessment Methodology (con;t)

Assumptions

- Proportion of TDI is allocated to sport fish consumption
- Average adult body weight 70 kg
- Fish meal size 227 g for average adult
- Meal size is proportional to body weight
- All calculations based on one month period

Exceptions

100% of TDI allocated to sport fish consumption with exceptions for sensitive population – reduce sport fish consumption by one meal per month for every 2 meals of commercial fish

Why: Data indicate average Hg concentration in commercial fish is 0.1 ug/g

Data Management

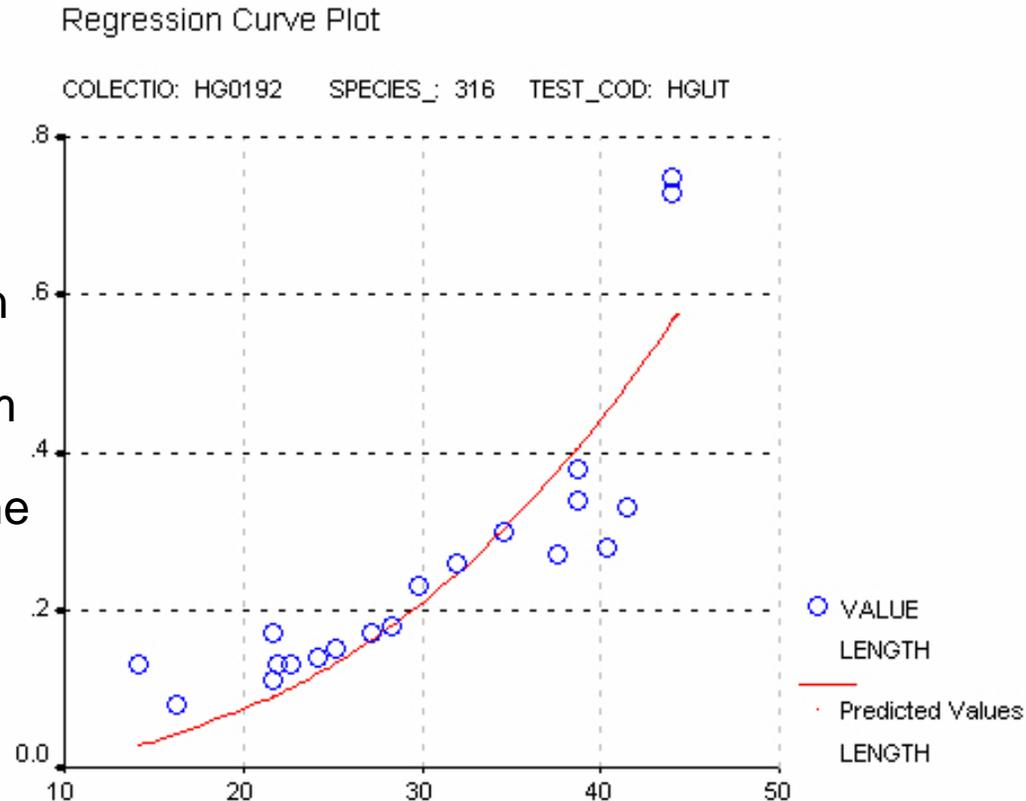
- Power-series regression
- Curve of predicted concentration vs length
- Advice in Guide provided in 5 cm intervals
- Concentration at upper end of the interval is used to calculate to consumption advisory for the entire interval

Example:

Mercury consumption restrictions for the sensitive population start at 0.26 ppm (8 meals) and 0.52 (4 meals)

Guideline for 8 meals is exceeded at 32 cm and 4 meals is exceeded at 42 cm

Therefore advice in the Guide will be – 8 meals up to 30 cm and 4 meals between 30 and 40 cm.



Advisory Tables

Lake Ontario / Lac Ontario

Length/ 15 20 25 30 35 40 45 50 55 60 65 70 75 >75 cm
 Longueur 6" 8" 10" 12" 14" 16" 18" 20" 22" 24" 26" 28" 30" >30"

Length/ 15 20 25 30 35 40 45 50 55 60 65 70 75 >75 cm
 Longueur 6" 8" 10" 12" 14" 16" 18" 20" 22" 24" 26" 28" 30" >30"

7. Ganaraska River / Rivière Ganaraska												
Continued/Suite												
Brown Trout ^{5,7,8,9}				4				2				0
Truite brune ^{5,7,8,9}				4								0
Lake Trout ^{2,7,8,9}								1				0
Truite de lac ^{2,7,8,9}												0
Coho Salmon ^{2,8,9}												1
Saumon coho ^{2,8,9}												0
Chinook Salmon ^{2,7,8,9}										2		1
Saumon quinnat ^{2,7,8,9}												0
8. Northeastern Lake Ontario / Partie nord-est du lac Ontario												
Chinook Salmon ^{2,7,8,9}								8		4		1
Saumon quinnat ^{2,7,8,9}								8		4		0
Rainbow Trout ²								2		1		0
Truite arc-en-ciel ²										0		
Brown Trout ^{2,10}								4		0		
Truite brune ^{2,10}								4		0		
Lake Trout ^{2,8,9,10}								8	4	2	1	0
Truite de lac ^{2,8,9,10}								8	4			0
Walleye ⁵										8		4
Doré ⁵								8		4		0
Smallmouth Bass ²								8		4		
Achigan à petite bouche ²								8		4		
Yellow Perch ²								8				
Perchaude ²								8				
Rock Bass ²								8				
Crapet de roche ²								8				
American Eel ²											1	0
Anguille d'Amérique ²												0
9. Upper Bay of Quinte / Partie supérieure de la baie de Quinte												
Chinook Salmon ^{2,7}												0
Saumon quinnat ^{2,7}												0
Walleye ^{5,8,9,10}								8			4	2
Doré ^{5,8,9,10}								8			4	0

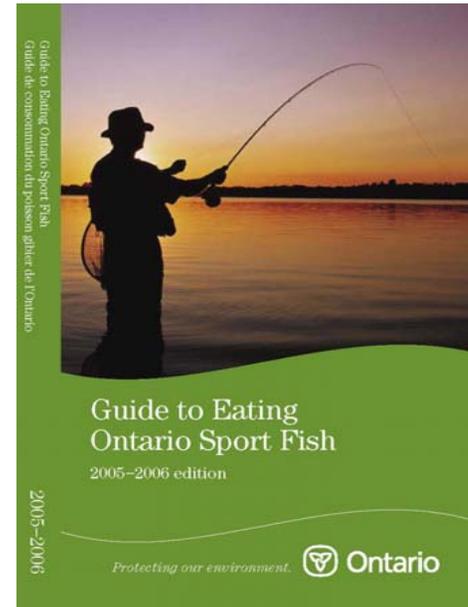
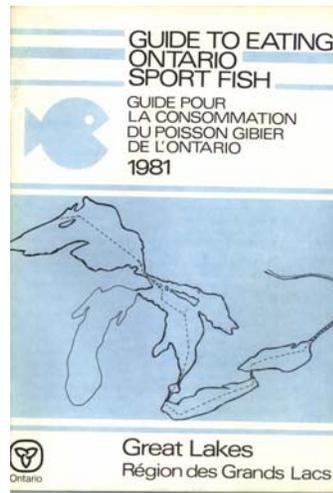
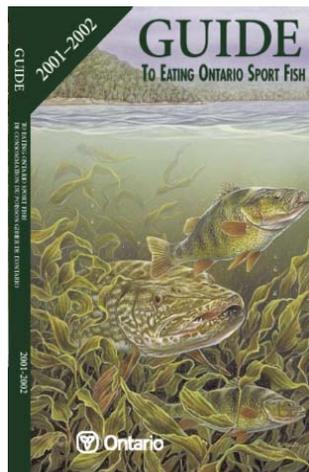
10. Middle Bay of Quinte / Partie centrale de la baie de Quinte													
Continued/Suite													
Walleye ^{5,8,9,10}										8		4	2
Doré ^{5,8,9,10}										8		4	0
Northern Pike ²												8	
Brochet ²												4	
Largemouth Bass ²										8			
Achigan à grande bouche ²								8		4			
Smallmouth Bass ²										8			
Achigan à petite bouche ²										8		4	
Yellow Perch ^{5,7}										8			
Perchaude ^{5,7}								8		4			
White Perch ^{2,7}										8			
Baret ^{2,7}								8		0			
Black Crappie ²										8			
Marigane noire ²										8			
Rock Bass ²								8					
Crapet de roche ²								8					
Pumpkinseed ²								8					
Crapet-soleil ²								8					
Whitefish ^{2,7}											1	0	
Grand corégone ^{2,7}												0	
Brown Bullhead ²										8			
Barbotte brune ²										8			
Channel Catfish ^{2,10}								8		4	2	1	0
Barbue de rivière ^{2,10}								8		4			0
Freshwater Drum ⁵											8		
Malachigan ⁵											8	4	
White Sucker ^{2,8,9}											8		
Meunier noir ^{2,8,9}											8		
American Eel ²												2	1
Anguille d'Amérique ²													0
Gizzard Shad ²										2	1		
Alose à gésier ²										0			

Risk Communication

Primarily through the biennial ***Guide to Eating Ontario Sport Fish***

350,000 copies/issue distributed free through Beer Store, LCBO, Sports stores, Government Offices, direct mailing, etc.

Available at MOE website.



Risk Communication (con't)

Brochure distributed through Medical Officer of Health



Contaminants in Sport Fish
Important information for women of child-bearing age and parents of children under 15

Protecting our environment. 

Fish can be an important part of a balanced diet. They are low in fat and a great source of high-quality protein and other nutrients.

But Did You Know

- Some fish from Ontario waters have contaminants that can be harmful to humans.
- Scientific studies show that the developing fetus and young children are particularly sensitive to the contaminants found in some freshwater fish.
- Women of childbearing age and children under 15 should restrict their consumption of most sport fish caught in Ontario waters.
- Some freshwater fish should not be consumed at all.

Most jurisdictions in North America advise consumption restrictions on sport fish. The Ontario Government monitors contaminants in Ontario fish and provides consumption information to the public through the *Guide to Eating Ontario Sport Fish*.

Keep Yourself Informed!
By being informed about contaminants and knowing the kinds of fish that are safe to eat, you can prevent harm to you and your children while continuing to enjoy the health benefits of eating fish.

Sport Fish
If you consume sport fish you should consult the *Guide to Eating Ontario Sport Fish* for advice that is specifically for women of child-bearing age and children under 15.

The Guide provides:

- consumption advice on sport fish from more than 1,700 locations in Ontario;
- advice on the sizes and quantities of fish that can be safely eaten;
- advice on how to select fish with the lowest contaminants;
- advice on how to prepare fish to reduce contaminants;
- information on the different contaminants that are found in Ontario fish.

Store-bought Fish
Fish purchased from retailers are tested by the Canadian Food Inspection Agency to ensure they meet Canadian standards. Most are low in contaminants. However, if you regularly consume store-bought fish and intend to eat sport fish, you should check the *Guide to Eating Ontario Sport Fish* for specific advice.

Health Canada advises that women of child-bearing age and children under 15 should consume no more than one meal per month of shark, swordfish, fresh or frozen tuna (not canned tuna). These fish are known to contain higher levels of mercury. Women of childbearing age and children who are regular consumers of shark, swordfish or fresh or frozen tuna are advised not to consume any sport fish.

If in doubt, contact your doctor, or the agencies listed below.

Where to obtain your free copy of the *Guide to Eating Ontario Sport Fish*

- Government Offices;
- Liquor and Beer Stores in Ontario for a short period beginning in April 2005;
- Through the Sport Fish Contaminant Monitoring Program - number listed below, or by e-mailing sportfish@ene.gov.on.ca;
- On the Internet at www.ene.gov.on.ca

For Further Information/Pour plus de renseignements :
Sport Fish Contaminant Monitoring Program
Ministry of the Environment
125 Resources Rd.
Etobicoke ON M9P 3V6
Tel: (416) 327-6816 or 1-800-820-2716
Fax: (416) 327-6519

Health Canada
Tel: (613) 957-2991
Internet: www.hc-sc.gc.ca

Canadian Food Inspection Agency
Tel: (905) 795-9666

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Risk Communication (con't)

Poster template – to be posted at popular fishing locations

Guide to Eating Sport Fish from Hamilton Harbour

2005-2006

Check Before You Eat

Some sport fish in Ontario contain contaminants that may restrict the amount you should consume. The MOE recommends that you follow the consumption advice in the chart below which is taken from the *Guide to Eating Ontario Sport Fish*. For more detailed information, please consult the *Guide*.

1. Identify your fish species.
2. Measure the total length of the fish.
3. Refer to appropriate length range and species in the charts below for advice on what you should eat.
4. If you intend to eat fish from more than this location, please consult the *Guide*.

Legend

Maximum meals per month: 1 meal = 227g or 1/2 lb. skinless, boneless dorsal fillet

General Population
8, 4, 2, 1, 0

Sensitive Population
8, 4, 0

<p>Largemouth Bass</p>	<p>Rock Bass</p>
<p>Freshwater Drum</p>	<p>White Perch</p>
<p>Channel Catfish</p>	<p>Brown Bullhead</p>
<p>Carp</p>	<p>Yellow Perch</p>
<p>Northern Pike</p>	<p>White Bass</p>
<p>Bluegill</p>	

To receive a free copy of the English/French *Guide*, please contact:
 Ministry of the Environment
 Phone: 416.327.6816 or 800.820.2716
 E-mail: sportfish@ene.gov.on.ca
 Web site: www.ene.gov.on.ca

Please be sure to follow the legal fish limits described in the *MENE's Recreational Fishing Regulations*.

Produced in co-operation with Royal Botanical Gardens.

Summary information is available in 19 languages.

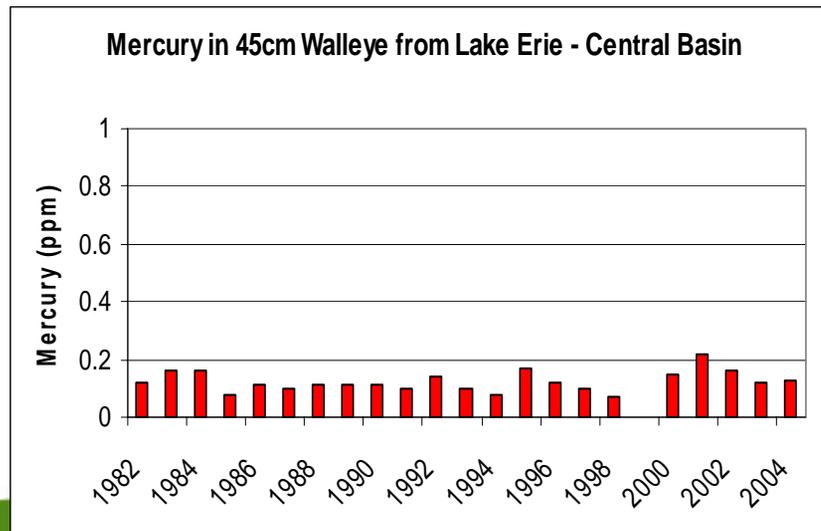
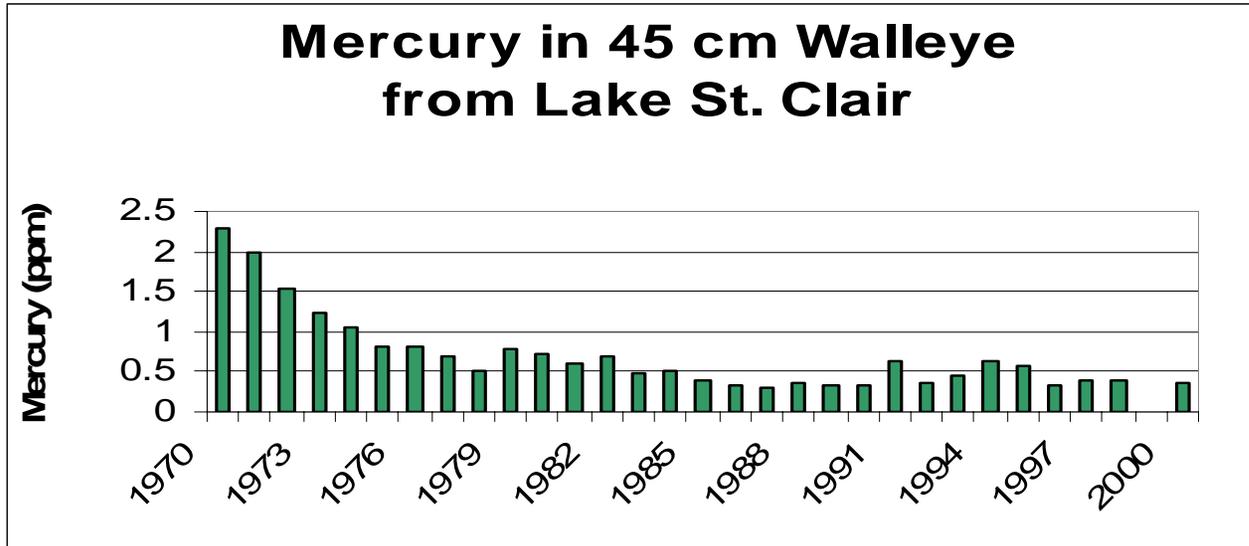
Protecting our environment.

Protecting our environment.

Protecting our environment.

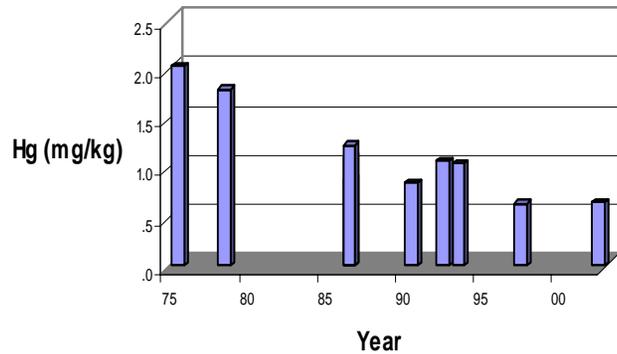
Trends in Mercury

Near point sources of Mercury

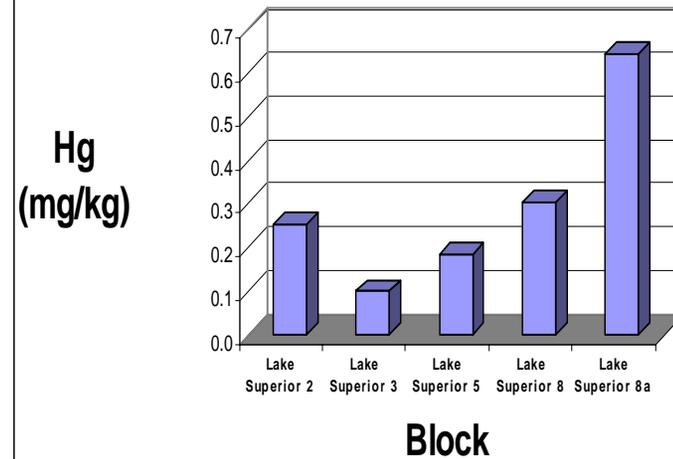


Trends in Mercury near point sources of mercury

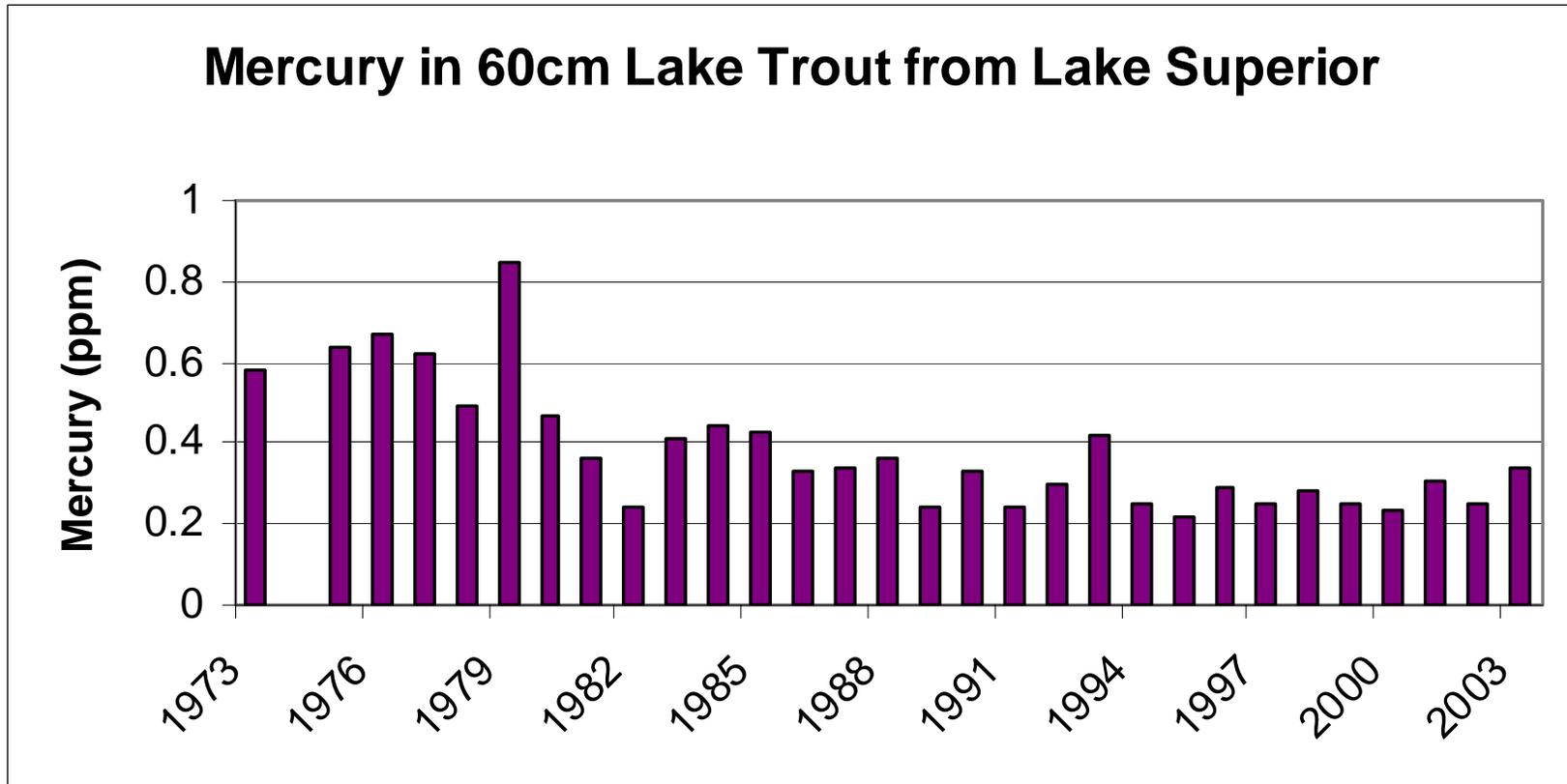
Mercury concentration in 45 cm Longnose Sucker from Lake Superior 8a - Peninsula Harbour (1975-2002)



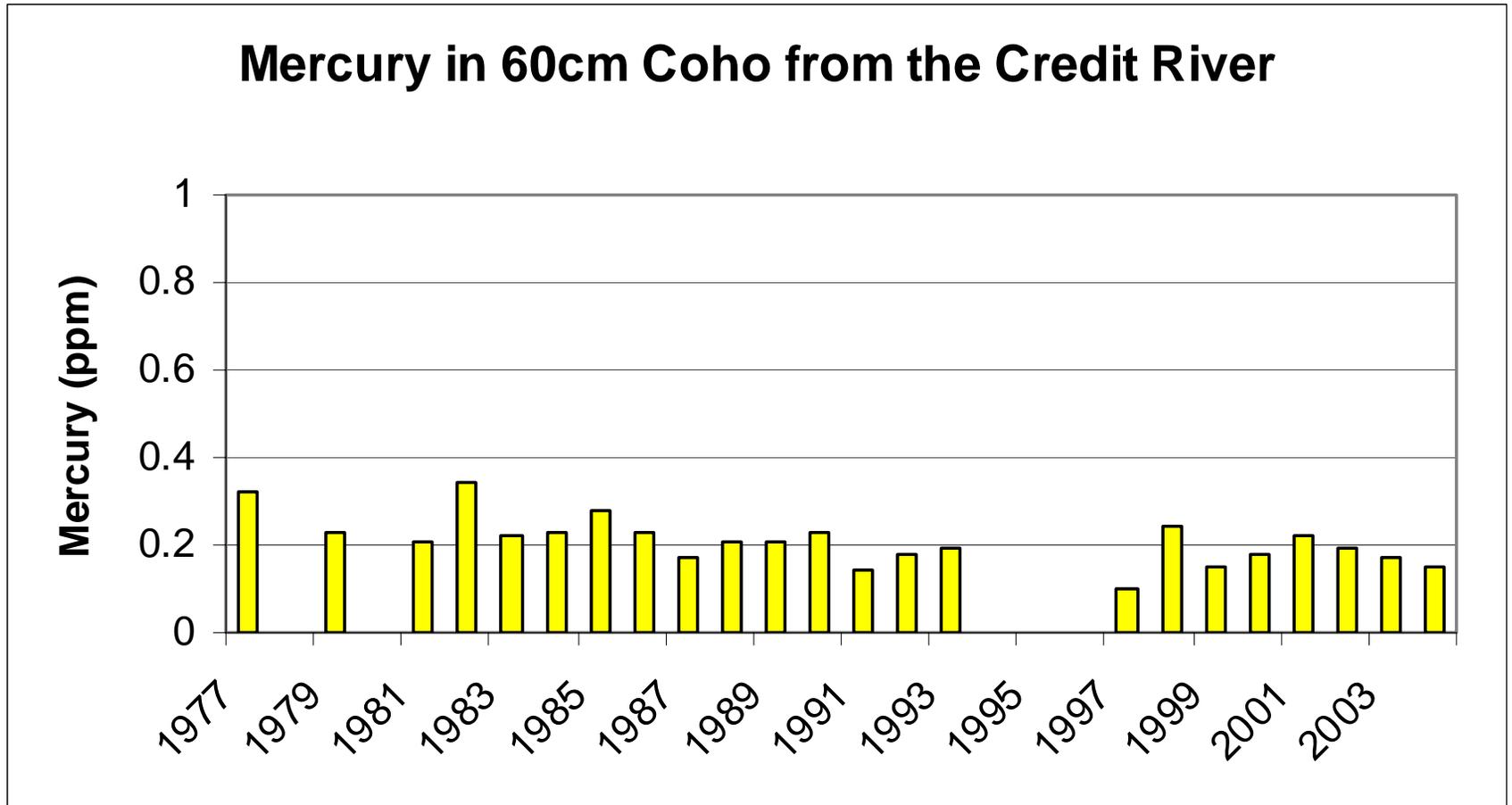
Mercury concentration in 45 cm Longnose sucker from Lake Superior (most recent data sets)



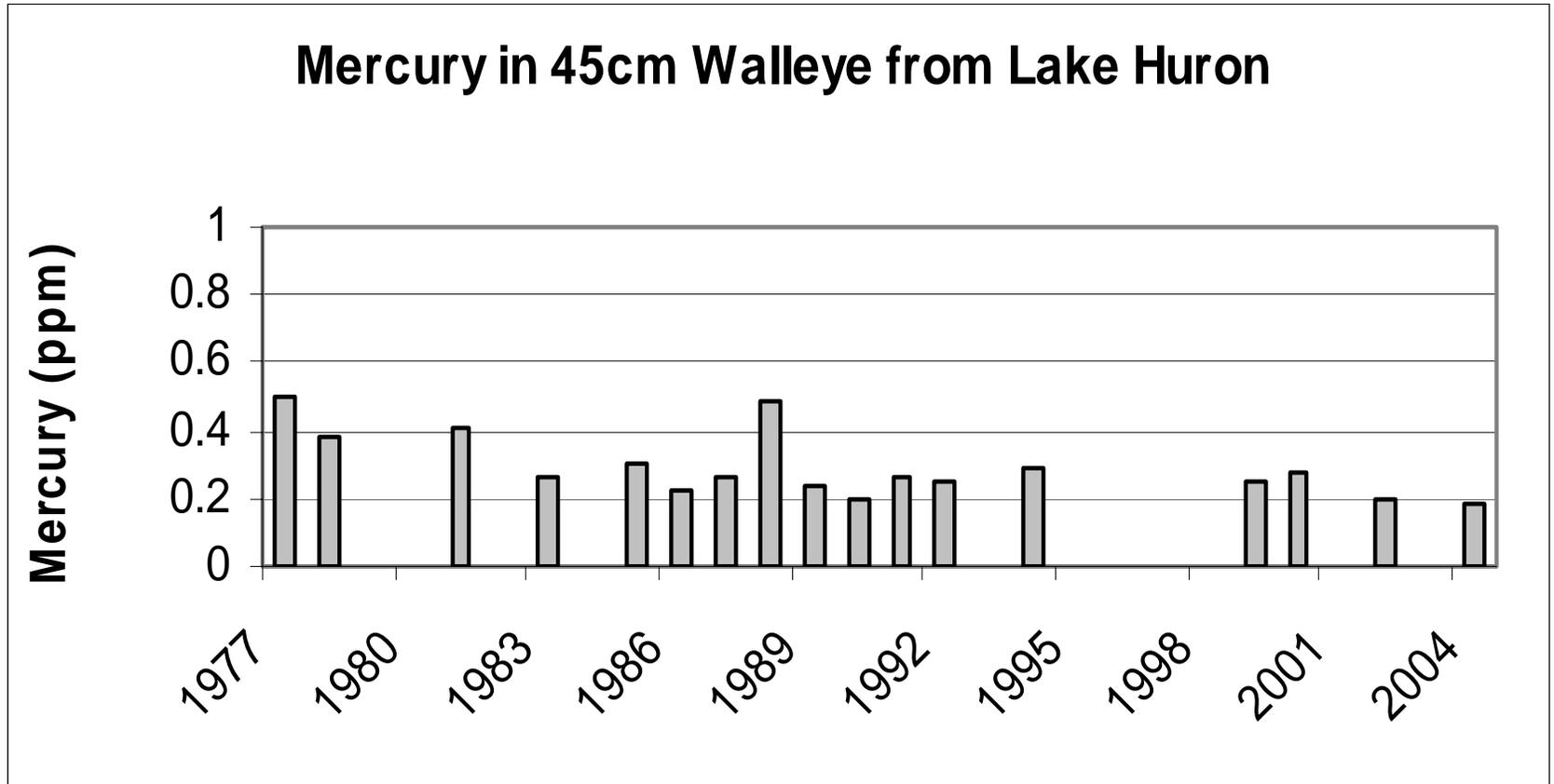
Trends in Mercury



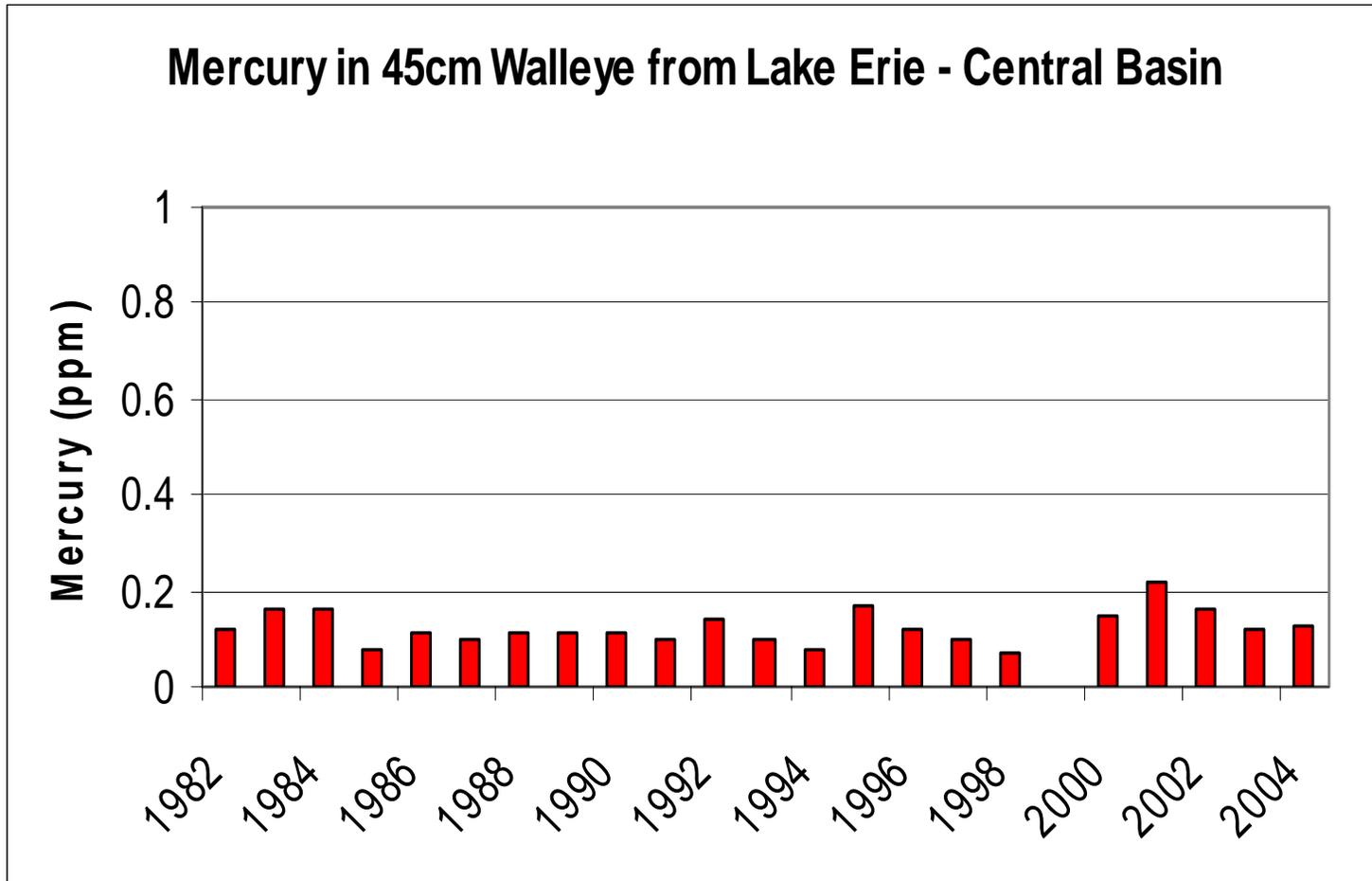
Trends in Mercury (con't)



Trends in Mercury (con't)

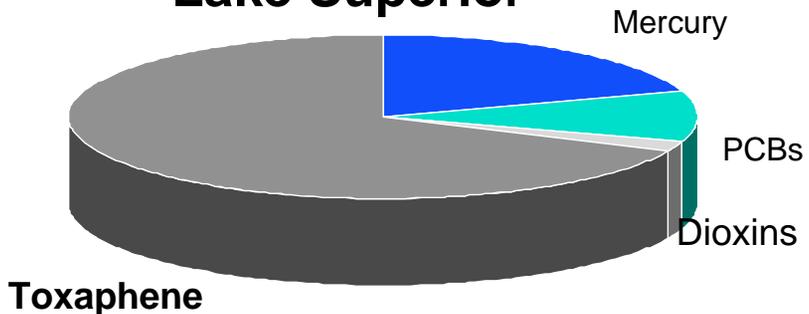


Trends in Mercury (con't)

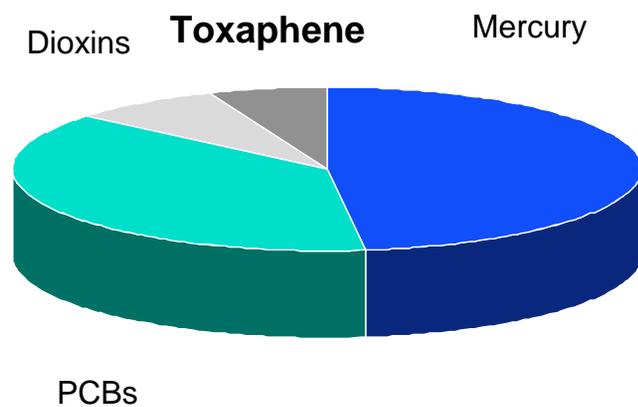


Consumption-Limiting Contaminants 2001

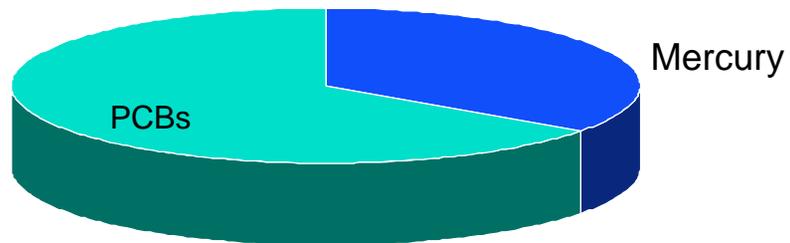
Lake Superior



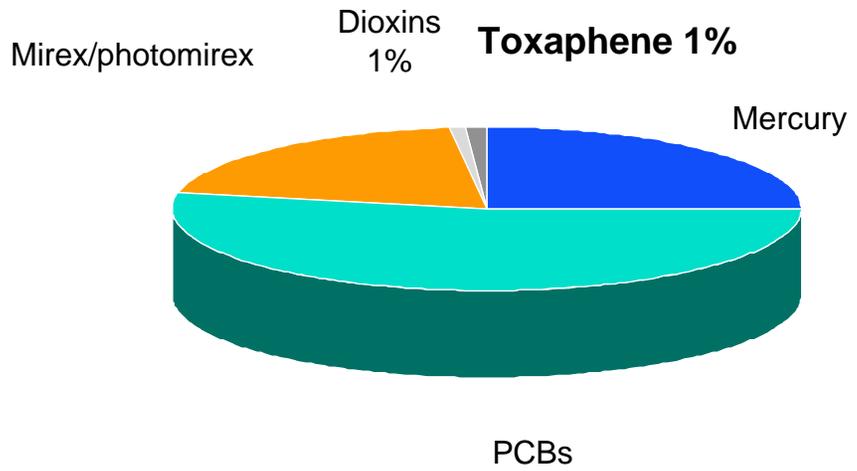
Lake Huron



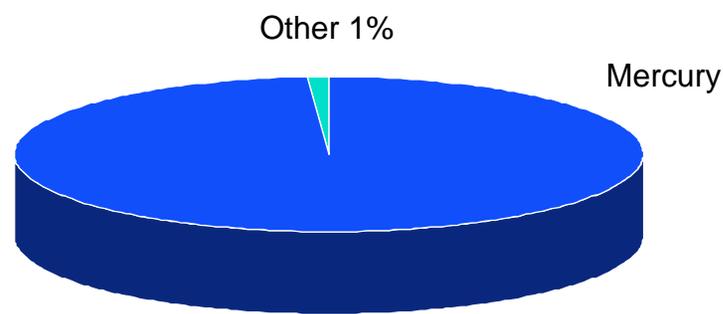
Lake Erie



Lake Ontario

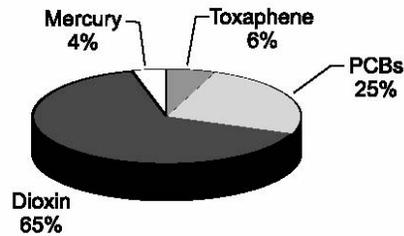


Inland Lakes

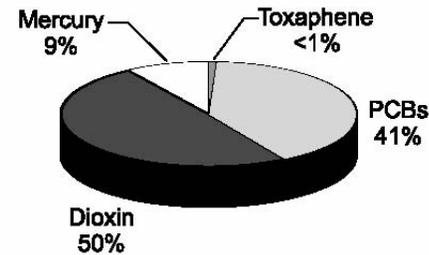


Consumption-Limiting Contaminants 2005

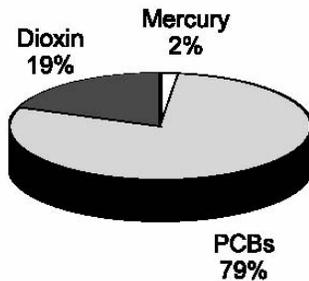
Lake Superior



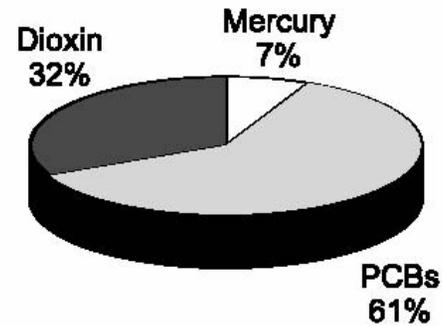
Lake Huron



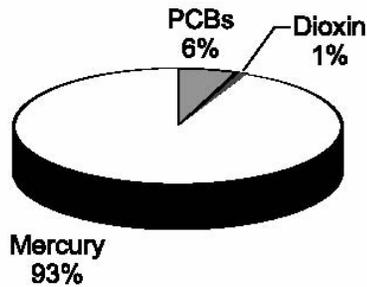
Lake Erie



Lake Ontario



Inland Lakes



Questions?