*Project S E.N.S.O.R. News

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Eating Fish
Maximizing Benefits and Minimizing Risks

As part of the Great Lakes Restorative Initiative, the Environmental Protection Agency has provided funds to Michigan State University to educate health care professionals on advice to provide patients on maximizing benefits of eating omega-3 fats while minimizing the ingestion of potentially harmful pollutants. This information pertains to both fish caught in the Great Lakes and their watersheds, as well as store bought fish.

In 2006, the American Heart Association published Recommendations for Cardiovascular Disease Risk Reduction that included **"Consume fish, especially oily fish, at least twice a week"**(Circulation 2006;114: 82-96)**.** Table 1 shows a list of oily fish. This recommendation was put forward so as to increase the ingestion of two omega-3 fatty acids, docosahexaenoic and eicosapentaenoic. Table 2 summarizes the benefits which can be obtained from ingesting fish or fish oil. Note only the lowering of triglycerides requires ingestion of the FDA approved high dose fish oil pill, Lovaza, four times a day. The other benefits are associated with eating fish twice a week or a daily fish oil supplement.

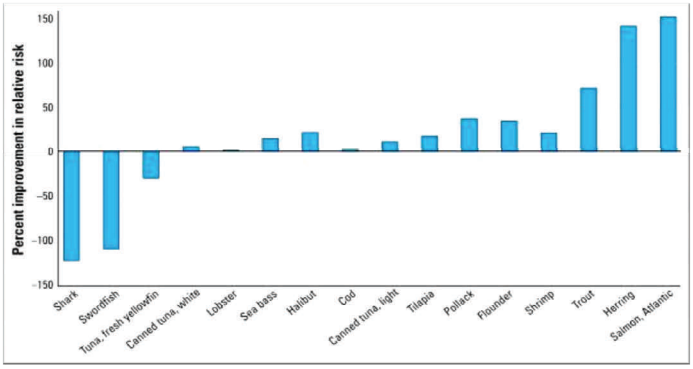
Table 1. Oily Fish
Anchovies
Carp
Eel
Herring
Kipper
Mackerel
Orange Roughy
Salmon
Sardines
Trout
Tuna (fresh only)

Table 2. Summary of Cardiovascular Benefits of Ingesting Fish/Fish Oil
Primary Prevention
19 % Reduction in CV Events (0.5gm/day)
S/P Myocardial Infraction
23% Reduction (0.5 gm/day)
Arrhythmias
30% Reduction Risk of Atrial Fib (0.5 gm/day)
Congestive Heart Failure
5-10% Reduction Mortality (0.5 gm/day)
Triglycerides
30-40% Reduction (FDA Approved 4 gm/day)

Eating Fish, continued...

The contaminants in fish are mercury and chlorinated hydrocarbons (i.e. DDT, dioxin, PCBs). Mercury is in the flesh of the fish and increases with the size and age of the fish. Four fish should never be eaten because of their mercury content, king mackerel, shark, swordfish and tile fish. Figure1 shows the best fish to eat to obtain the most omega-3 fatty acids while ingesting the least mercury (salmon, herring and trout).

Figure 1. Estimated Net Effect of Mercury and Fish Oils on Cardiovascular Risk, Two 6-oz Fish Meals per Week.



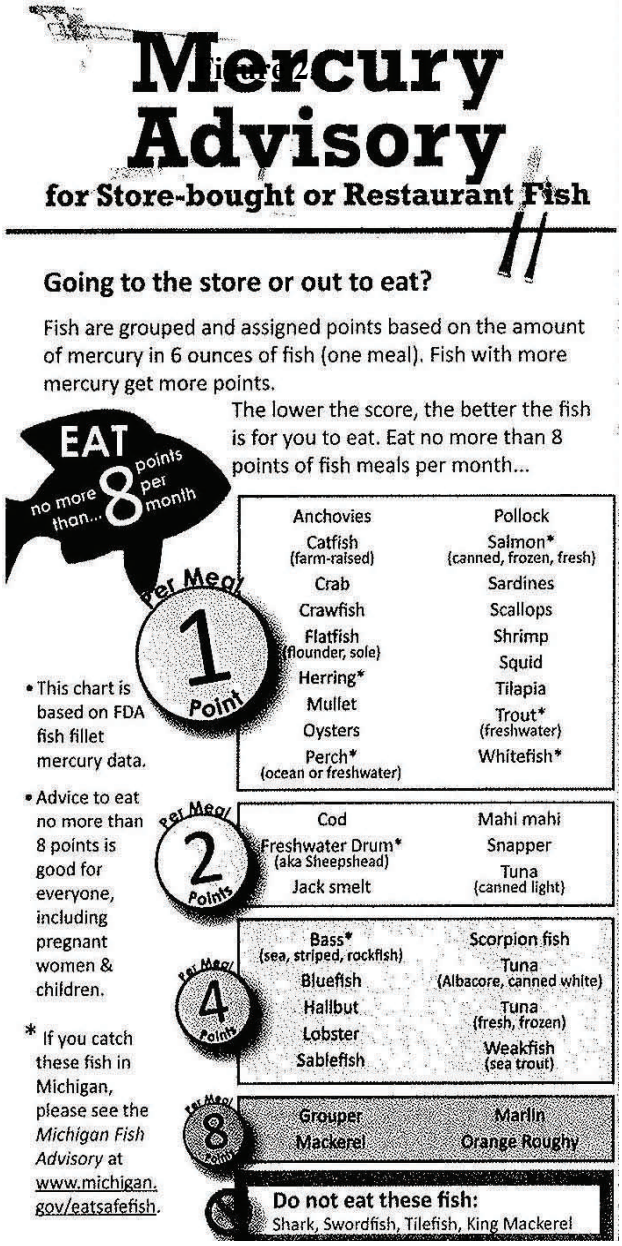
EHP 2009; 117: 267-275

Chlorinated hydrocarbons in the fatty part of fish are higher in certain rivers and lakes. People can reduce their consumption of these contaminants by selecting where they catch fish and during preparation and cooking by trimming off the fat, and baking, boiling or grilling the fish. The Michigan Department of Community Health (MDCH) puts out guidelines on how many and what type of fish to eat, by watershed: www.michigan.gov/documents/FishAdvisory03_67354_7.pdf. Since children are at the highest risk of the neurologic effects of mercury and the potential long term carcinogenic risk of chlorinated hydrocarbons, recommendations are stricter for children and women of child bearing age who will pass the contaminants to the fetus.

MDCH has a useful summary brochure on how many and what kind of fish to eat (Figure 2). This brochure assigns different types of fish from one to eight points and indicates someone should not eat more than eight points per month. The brochure is a variable at: www.michigan.gov/mdch/0,1607,7-132-54783_54784_54785---,00.html.

The medical literature does not support a clear difference between wild vs. farm fish in terms of benefits or risks.

Fish oil supplements do not contain mercury. Chlorinated hydrocarbons accumulate in fat but one can select fish oil less likely to have chlorinated hydrocarbons: www.edf.org/page.cfm?tagID=16536.



There are many resources on the web to obtain additional information about safe fish consumption. These include sites for continuing medical education and brochures for patients. A summary of such sites are:

Patient Resources

EPA Fish Advisories
http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/advisories_index.cfm

FDA Mercury in Fish and Shellfish – Consumer Guide
http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm110591.htm

MDCH Guidelines for Eating Michigan Fish and Wild Game
http://www.michigan.gov/mdch/0,1607,7-132-54783_54784_54785---,00.html

Michigan 2010 Fish Advisory –Recreational Caught Fish
http://www.michigan.gov/documents/FishAdvisory03_67354_7.pdf

Statewide Mercury Advisory –Recreational Caught Fish
http://www.michigan.gov/documents/mdch/Statewide_Mercury_Advisory_Fact_Sheet_2010-07_327066_7.pdf

Mercury Advisory – Store Caught Fish – Consumer Guide
http://www.michigan.gov/documents/family_fish_166020_7.pdf

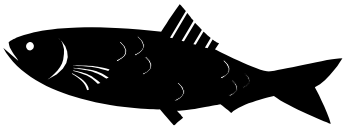
Evaluation of Contaminants of Fish Oils
www.edf.org/page.cfm?tagID=16536

Continuing Medical Education

Association of Reproductive Health Professionals
http://www.arhp.org/publications-and-resources/clinical-proceedings/RHE

Fish Facts for Health Professional: Methylmercury Exposure and Health Effects and Four Web–Based Modules
www.fish-facts.org

In summary, the data strongly supports that the regular ingestion of fish or fish oil has cardiovascular benefits. There are multiple resources to select the best fish to eat to obtain the beneficial omega-3 fatty acids while minimizing exposure to mercury and chlorinated hydrocarbon contaminants. All patients need to know about the benefits of eating fish and which fish to avoid. Conveying information about which fish to avoid to the parents of children and women of child bearing age has the highest priority.



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*PS *Remember to report all cases of occupational disease!*

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Michigan Law Requires the Reporting of Known or Suspected Occupational Diseases

Reporting can be done by:

Web
www.oem.msu.edu

E-Mail
ODREPORT@ht.msu.edu

FAX
(517) 432-3606

Telephone
1-800-446-7805

Mail
Michigan Occupational Safety & Health Administration (MIOSHA)
Management and Technical Services Division
P.O. Box 30649
Lansing, MI 48909-8149

Reporting forms can be obtained by calling (517) 322-1817
Or
1-800-446-7805