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Contaminants in Freshwater Fish: Guidelines for Consumers

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Fishing is a favorite pastime that is enjoyed by more than 35.6 million anglers nationwide. Fish are a low-fat and nutritious, high-protein food. While most sport-caught fish are safe to eat, consumption of fish from contaminated waters may pose serious health risks. State agencies within the U.S. are primarily responsible for protecting residents from health risks associated with the consumption of contaminated fish. States typically provide fish consumption advisory information for lakes and rivers that are popular fishing sites.

This publication describes the health risks associated with consumption of contaminated fish, suggests how to reduce your exposure to harmful contaminants, and provides a link to information from the Environmental Protection Agency (EPA) that will enable you to contact the appropriate officials regarding fish consumption advisories in your area.

What contaminants are found in freshwater fish?

Most fish advisories in the U.S. and Canada have been issued to warn consumers of high levels of mercury in fish (EPA 1997). Much of the mercury entering freshwater lakes and streams comes from household and industrial wastes and the burning of fossil fuels. Mercury advisories have increased 86% since 1993. The increase in mercury advisories is largely related to recent increases in the number of lakes tested.

PCBs, chlordane, dioxins, toxaphene, and DDT are five other chemical substances responsible for contamination of freshwater fish. Like mercury, these contaminants are

typically man-made substances that are released into the environment following various manufacturing processes. PCBs are synthetic oils that were commonly used in the production of electrical transformers and carbonless paper. Although banned since 1976, PCBs do not readily decompose. Rather, PCBs typically will remain in lake water and sediments for decades. The number of advisories issued for PCBs and contaminants other than mercury have remained steady or have declined slightly since 1993 (EPA 1997).

Can I eat fish that are contaminated with mercury?

Our most reliable information concerning how contaminants affect humans is related to mercury toxicity. Small quantities of mercury acquired from repeated consumption of polluted fish buildup over time in the human body. The likelihood of experiencing health risks from eating contaminated fish is related to three factors:

- 1) the contaminant levels in fish,
- 2) how much fish you eat, and
- 3) how frequently you eat fish.

Simply stated, people who eat large quantities of highly contaminated fish over short periods of time have the greatest health risks. Fortunately, mercury levels (in the form methylmercury) in your body decrease with time. Several months or even years may pass before contaminants reach levels that pose a health risk.

Most fish advisories provide advice as to the number of fish meals that may be eaten with no adverse health effects. One meal usually constitutes seven ounces of fish

for a 130-pound person. Estimates of the number of meals that may be safely consumed differ according to the level of fish contamination within a particular lake and the number of weeks/year that a person consumes contaminated fish.

What are the health risks associated with consuming contaminated fish?

The most common contaminant, mercury, is a neurotoxin that may cause damage to the nervous system (brain and spinal cord). Early symptoms of poisoning in adults include a loss of coordination and paresthesia (burning or tingling sensation in your fingers and toes). Patients with continued exposure may experience blurred vision, followed by impaired speech and loss of hearing. Acute and prolonged exposure could result in paralysis and eventual death.

Fish advisories for women of child bearing years, pregnant or nursing mothers, and young children are greatly restricted because the fetus and children under 6 years of age are more susceptible to a wide range of mental and physical defects. Unlike mercury that is slowly expelled from the body, PCBs are more stable substances that are poorly excreted by humans. Recent research has shown that PCBs are a carcinogen (cancer causing agent) in laboratory animals. Prolonged exposure to PCBs also may adversely affect fetal development in humans.

Which fish are most likely to be contaminated?

Fish absorb contaminants throughout their lifetime from food they eat. Older and larger fish generally will have higher levels of contamination compared to younger, smaller fish. Predatory fish (fish that eat other fish) also are more likely to have higher contamination levels. Larger, older predatory fish such as northern pike and walleye have the greatest exposure to contaminants. Fatty fish that accumulate contaminants from sediments along the lake or stream bottom also may have higher levels of pollutants.

PCBs and dioxins concentrate in fat of fatty fish such as catfish, carp, and lake trout. Trimming fat from fish can reduce the levels of PCBs or dioxins from 25–50%. Although fat removal from fish can reduce PCB and dioxin levels, fat trimming will not reduce mercury that is tightly bound to proteins in fish.

No fish cleaning or cooking method will reduce the amount of mercury in a meal of contaminated fish. Panfish such as bluegill, crappie, or perch are the safest fish to eat because the amount of contaminants is usually lower in these fish.

What can I do to reduce my exposure to contaminants and still enjoy fish?

Anglers cannot visually distinguish contaminated fish from those that are safe to eat because polluted fish swim, feel, and taste the same as unpolluted fish. The best solution for reducing exposure to contaminants is to contact the appropriate state agency responsible for issuing fish advisory information.

In addition to contacting local officials regarding contaminant levels, follow these simple guidelines to reduce your exposure to contaminants and still enjoy fish:

- **Keep smaller fish for eating.** Besides tasting better, younger, smaller fish are less contaminated than older, larger fish.
- **Eat less-contaminated fish.** Substitute a few panfish meals for the walleye or northern pike you might otherwise eat. Contaminants buildup in large predatory fish far more than in panfish.
- **Eat smaller meals of big fish.** Freeze part of your catch to space the meals out over time. This gives your body time to eliminate mercury.
- **Clean and cook your fish to remove contaminants.** PCBs and dioxin concentrate in fatty tissues. Remove the skin from fish and trim off fatty areas. Broiling, baking, or grilling fish allows contaminated fat to drip away. Poaching and deep-fat frying removes some contaminants, but discard the broth or oil. Remember, mercury is bound to the meat of fish, so you cannot reduce or remove it by cleaning or cooking.

Where can I obtain fish advisory information?

Information presented here is not intended to discourage anglers from eating fish but should be used as a guide for minimizing your exposure to contaminated fish. For more information concerning national fish advisories, review the updated listing of advisories from the Environmental Protection Agency at this website:

<http://www.epa.gov/OST/fishadvice/facts.html>

For details concerning fish advisories in your area, contact the appropriate state agency after obtaining the proper contact information provided by the Environmental Protection Agency at (202) 260–1305.

Anglers fishing in Minnesota waters are encouraged to obtain advisory information for specific lakes from the DNR at <http://www.dnr.state.mn.us> (go to *Lakes, Rivers and Streams*, then click on *Lake Survey Reports*).

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SDSU Food Safety Homepage

<http://www.abs.sdstate.edu/flcs/foodsafety/foodsafes.htm>

National Food Safety Database

<http://www.foodsafety.org>

One-stop shopping for credible food safety information

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