

## FISH CONSUMPTION ADVICE: *Eating Sport Fish from West Virginia Waters* 2009 Health Update

*Fish are naturally equipped to adapt to changes in the aquatic environment in order to thrive and survive. However, in some parts of West Virginia, the health of stream fish is threatened by the introduction of contaminants into nearby waters. Several incidents throughout U.S. history clearly demonstrate that exposure to certain environmental contaminants results in tissue accumulation, magnification through food chains, and adverse fish and human health effects. Not all contaminants will be harmful, or occur in doses high enough to have an adverse effect on fish. However, persistent environmental contaminants in fish at elevated levels may pose a threat to other fish, wildlife and humans that consume them. Careful selection of fish you consume can ensure your continued future good health.*

### ***Benefits of Eating Fish and Seafood***

West Virginia boasts of an abundance of fishable streams across the state. Sport fishing has become one of the most popular sources of recreation for visitors and state residents. It provides a conservative way of life and constant source of nutrition for local subsistence fishermen or anglers.

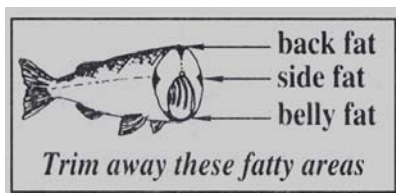
Eating properly prepared and cooked fish and shellfish is widely recognized as an integral part of a healthy, balanced diet. Fish is a nutritional source of proteins. It is low in saturated fats, cholesterol, and sodium, and contains essential nutrients that play a major role in reducing the risk of heart attacks and stroke.

### ***Exercise Care in Eating Certain Types of Fish***

Some fatty fish (e.g., sardines, lake trout, and salmon) contain high levels of omega-3 fatty acids; however, the fat of other types of fish can also be the source of low concentrations of contaminants. Fish living in waters to which excessive chemicals have been discharged may absorb and accumulate some of these chemicals in fatty or muscular tissues. Over time, the amount of contaminants tends to buildup in fish tissues and in the food chain. With continuous consumption, these chemical contaminants may pose a risk to the consumer.

### ***Contaminants Found in WV Fish***

Some streams in West Virginia contain fish that are contaminated with low concentrations of mercury, polychlorinated biphenyls (PCBs), selenium and to a lesser extent, polychlorinated dibenzo-*p*-dioxins (dioxin). If these chemicals are present in your fish, it may be difficult to smell, taste, or see them. Fatty tissues (e.g., the belly flap, lateral line, subcutaneous and dorsal fat, and the dark muscle, gills, eyes, brain, and internal organs) will concentrate organic chemicals more readily than muscle tissue (fillet). Properly cleaning, preparing, and cooking the fish to remove fatty parts will reduce your potential exposure to contaminants in fish.



(Graphic courtesy of GA DNR)

**Mercury** is found in many waters across the nation. It occurs naturally in the environment but may also be contributed to the open water, land, and air as a result of human activities (e.g., industrial release from coal-burning power plants; solid waste collection and processing; solid waste, municipal waste, and hospital waste incineration; or during the production of other chemicals). Once in the water, mercury is converted to methylmercury by bacteria and other processes. Fish readily absorb methylmercury from their food and from the water as it passes over their gills. Once in the body, most of the methylmercury binds to proteins and muscle where it may persist for a long time. Developing fetuses and children under the age of 15 who are exposed to excessive amounts of mercury over time are more sensitive to mercury than adults and may suffer harmful effects to the nervous system. The Environmental Protection Agency recommends limiting fish consumption to one meal per week (six ounces of cooked fish per adult; two ounces of cooked fish per child). National advisories for mercury in fish are available from the Food and Drug Administration and EPA websites.

Production and use of PCBs was banned in 1979. These man-made substances were formerly used in electrical transformers, carbonless papers, cutting oils and hydraulic fluids. Although environmental levels of PCBs have declined over time, PCBs are extremely persistent and may still be found in sediments at the bottom of lakes and streams. Larger, older, fattier fish tend to concentrate higher amounts of PCBs. Once eaten by humans, PCBs are stored in body fat for many years, gradually increasing in concentration every time it is consumed. Infants and children of women who have eaten a lot of PCB-contaminated fish generally have lower birth weights and delayed physical and mental development. PCBs also affect reproductive function, the immune system and may increase the risk of cancer.

**Selenium** is a naturally occurring mineral that is widely distributed in most rocks and soils. It is a component of pigments in plastics and paints. Selenium is also used in the preparation of pharmaceuticals, pesticides and rubber. Selenium can be released into the environment during the combustion of fossil fuels and when metals are smelted. It is present in the leachate from coal fly ash disposal areas. In West Virginia selenium has been found downstream of large-scale earth disturbance activities. Selenium is an essential nutrient and is frequently a component of multiple-vitamin supplements. Excessive exposure to selenium may disrupt endocrine function and growth hormones and cause dermatologic effects, such as hair and nail loss.

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**Dioxins** are a family of chemical compounds that are found everywhere in the environment at very low concentrations. They are byproducts of combustion and pulp and paper processes and are also generated during the manufacture of herbicides, disinfectants and chlorinated phenols. Some dioxins are known to persist in environmental and biological settings for long periods of time. The limited occurrence of dioxin contamination in West Virginia is largely due to past industrial activities in the lower Kanawha Valley, near the city of Nitro.

Mercury, PCBs, and dioxin can build up in the body and cause harm to women who may become pregnant, currently are pregnant, or currently are breastfeeding. Exposure to these chemicals potentially can affect the fetus and/or a developing child.

### *Guidelines to lower your health risk of eating contaminated fish*

#### **Recreational Anglers**

You can protect yourself by fishing in less contaminated waters. Find out which lakes and rivers have been tested for contaminants. If you don't know the safety of the fish in the lake or river you are fishing, a safer choice may be to release your catch.

You can further reduce your exposure to contaminants by following these recommendations:

- **Eat smaller fish.** As a general rule, larger, older fish may be more contaminated than smaller, younger fish.
- **Vary the kind of fish you eat.** Trout and pan fish, such as bluegill and crappie, eat insects and other aquatic life that are less likely to contain high levels of contaminants.
- **Eat fewer fish with more fatty flesh,** such as carp and catfish that tend to collect contaminants in stored fat.
- **Eat fewer predatory fish.** Bass, walleye, and catfish may have higher levels of contaminants building up because they feed on other fish.

If you wish to decrease the potential risks associated with eating contaminated sport fish and continue to enjoy the fun of fishing, you might **consider catch and release**. When practicing catch and release, follow these simple guidelines:

- Release fish quickly, while still in the water, if possible.
- If the fish is deeply hooked, do not tear out the hook, instead cut the leader or the hook to give the fish a chance to survive.

- Avoid playing the fish to exhaustion.

#### **Women, Infants and Children**

You may be at special risk from eating contaminated fish if you are pregnant, planning to be pregnant, nursing a baby, elderly, or suffering an immune deficiency. Contaminated fish may not look, smell, or taste different; but it can still harm you – and your baby. Children should not eat contaminated fish because they are still growing and developing, and therefore are at special risk from contamination. Contaminants in some fish:

- Affect your baby more than they affect you;
- Are difficult to detect; and
- Cause problems many years after consumption

#### **For more Information**

These advisories are issued to protect the health of people who eat fish from inland state waters and are based on how often fish are eaten, the amount and type of fish consumed by various populations, and the contaminant levels in fish considered "safe" to eat. Fish advisories attempt to balance the nutritional benefits of fish and the need to minimize exposure to contaminants. As a result, most advisories recommend limiting the number of meals of a particular fish taken from a specific water body. Please contact any of the below offices for further assistance:

#### **WV Department of Health & Human Resources (DHHR)**

304-558-2981

<http://www.wvdhhr.org/fish/default.asp>

<http://www.wvdhhr.org/oehs>

#### **WV Division of Natural Resources (DNR)**

Fishing Regulations, Licenses

304-558-2771

<http://dnr.state.wv.us>

#### **WV Department of Environmental Protection (DEP)**

304-926-0449

<http://wvdep.org>

#### **US Environmental Protection Agency (EPA)**

<http://www.epa.gov/waterscience/fishadvice/advice.html>

<http://epa.gov/ost/fish>

#### **US Food and Drug Agency (FDA)**

<http://www.cfsan.fda.gov/~dms/admeHg.html>