Questions and Answers Concerning Fish Advisory for Soldier, Soldier Annex and Long Lakes

July 1, 2003

1. What is the fish advisory at Soldier, Soldier Annex and Long Lakes?
The Arizona Department of Environmental Quality (ADEQ), the Arizona Game and Fish Department (AGFD) and the Arizona Department of Health Services (ADHS) are advising consumers **not to consume any fish from Soldier, Soldier Annex and Long Lakes.**

This advisory does not limit recreational use of Soldier, Soldier Annex and Long Lakes for fishing, bird watching or other types of recreation.

2. Where is this fish consumption advisory in effect?
This fish consumption advisory applies only to Soldier, Soldier Annex and Long Lakes, located in the Coconino National Forest in Coconino County 35 miles southeast of Flagstaff.

3. How did the fish consumption advisory for Soldier, Soldier Annex and Long Lakes come about?
Mercury was detected at elevated concentrations in fish taken from Soldier Lake as a part of a study conducted by ADEQ and AGFD. Average mercury concentrations of 1.65 milligrams per kilogram (mg/Kg) were measured in walleye caught from the lake, which is interconnected with Soldier Annex and Long Lakes. On the strength of these data, a fish consumption advisory has been issued jointly by the Arizona Department of Health Services and ADEQ.

4. Why is mercury considered harmful?
Mercury is a liquid metal that when consumed by living organisms is transformed to methylmercury (or "organic" mercury). While methylmercury has been linked to a variety of health effects, the primary basis for this fish advisory is its toxicity to the nervous system, including the brain. Most at risk are babies and unborn children whose mothers consume fish containing mercury during pregnancy or while nursing. Exposure to mercury at elevated concentrations can delay walking and talking and cause learning disabilities in children. If you have questions about eating fish during pregnancy or while nursing, please contact your health care provider. Additional information on this subject can be found at:

http://www.epa.gov/waterscience/fish/chemfacts.html
http://www.atsdr.cdc.gov/toxprofiles/tp46.html
http://www.cfsan.fda.gov/~acrobat/hgadv1.pdf

5. I've eaten fish from Soldier, Soldier Annex and Long Lakes in the past. Am I OK?
The process for calculating risks from exposure to mercury is very conservative. Methylmercury will naturally leave your body over time once exposure has stopped. This process occurs at a rate of roughly one half of the total amount in your body about every two months. If you have any questions about risks from mercury you may have consumed in the past, please contact your health care provider.

6. Where did the mercury come from?
Mercury occurs naturally in the environment and is found in small concentrations in Arizona soils. Cinnabar, a natural solid form of mercury, occurs as reddish veins in or near recent volcanic rocks. While there are no significant cinnabar deposits in Coconino County, seven of Arizona's 15 counties contain significant deposits with historic mining and exploration for the metal occurring in several areas, including Maricopa and Pinal counties. Mercury has also been used in many industrial and agricultural applications and also in placer mining. Mercury can enter lakes and streams from any of these sources and will build up over time, especially if a waterbody is dammed and the sediments cannot be naturally flushed out. It only takes an extremely small amount of mercury to contaminate a water body. To illustrate, one part per million (the same as one milligram per kilogram) is like one day in 2,739 years.

7. How did the mercury build up in the fish?
Once mercury has entered a lake or stream, it is readily taken up by bacteria found in sediments and sometimes within the animals themselves. Mercury can build up in tissues of insects and as these insects are eaten by predators and these organisms are, in turn, eaten by larger predators, the mercury concentration increases every step, all the way up the "food chain" to "top predators" such as the bass and walleye. Concentrations of mercury in large, older fish can be many times those found in the insects at the bottom of the food chain.

8. Is it safe to fish in Soldier, Soldier Annex and Long Lakes?
Yes. Recreational fishing should not be affected by this advisory. It is safe for people of any age to handle fish in catch and release situations and as stated above, contact with the water should not pose a risk.

9. Is it safe to swim or wade in Soldier, Soldier Annex and Long Lakes?
Most probably. Once mercury enters an aquatic ecosystem such as a lake or stream, it is quickly accumulated in the muscle tissue of living organisms such as aquatic insects and fish where it primarily remains, moving from organism to organism. In aquatic ecosystems the vast majority of the mercury is most likely contained in the organisms inhabiting that system, leaving only very small amounts in the water. As of this writing, no data is available on water column mercury, but ADEQ will be taking and analyzing samples as soon as possible.

10. Is this just an Arizona problem?
Public consumption advisories regarding mercury are common throughout the United States and Canada. All but six states have mercury advisories presently in effect, 14 states having statewide advisories and Minnesota alone has 937 mercury advisories. Arizona currently has five other lakes with mercury advisories, Peña Blanca and Arivaca lakes near Nogales, Upper and Lower Lake Mary near Flagstaff and Lyman Lake in Apache County. In January, 2001, the USEPA and the FDA jointly issued a fish advisory covering both commercially and recreationally caught fish, advising women who are pregnant or who may become pregnant, to limit consumption of all fish to one eight ounce fillet per week. More information, and the text of this advisory can be found at:

http://www.epa.gov/waterscience/fish/