PHYSICIANS FOR SOCIAL RESPONSIBILITY

MERCURY #3 FACTSHEET

Mercury in Fish

ENVIRONMENT AND HEALTH PROGRAM

People can be exposed to mercury from a number of sources. They may be exposed from broken thermometers or other spills in the home or workplace, or from breathing airborne mercury from power plants, incinerators, and other industrial facilities. A small amount of mercury exposure may also be due to releases to the atmosphere from natural sources such as volcanic eruptions and rock weathering. However, most Americans get the majority of their mercury exposure by eating an otherwise nutritious food—fish.

Once released into the air from a power plant's smokestack or other industrial activity, mercury drifts in the atmosphere, but eventually returns to the surface, mostly into lakes, rivers, and oceans. Aquatic microorganisms convert the heavy metal into the organic form, methylmercury. Fish absorb methylmercury from water as it passes over their gills and as they feed on other aquatic organisms. As larger fish eat smaller ones, concentrations of the pollutant increase in the bigger fish in a process known as bioaccumulation. Consequently, larger predator fish have higher concentrations as a result of eating contaminated prey.

Some favorite edible fish species, including swordfish and fresh tuna, are becoming too hazardous to eat. These large, long-lived fish can accumulate mercury levels approaching or exceeding the Food and Drug Administration (FDA) limit of one part per million (ppm). The agency based this limit on the lowest level of mercury associated with adverse effects in adults involved in accidental poisoning incidents, and incorporated a 10-fold margin of safety to ensure that children and fetuses would also be adequately protected.

At the same time, the FDA has been criticized for failing to adequately inform consumers, especially pregnant women and parents of small children, about the danger of mercury in canned tuna. Eleven states advise pregnant women and children to limit consumption of canned tuna, the most heavily consumed fish in the United States. Canned albacore, sometimes called "white" tuna, may contain as much as three times the mercury found in canned "chunk light" tuna.[1]

In 2002, mercury contamination caused 45 states to issue a total of 2,140 fish advisories, warning anglers and the public not to eat certain fish and to limit consumption of others. Between 1993 and 2002, advisories for mercury increased by 138%. The FDA now advises pregnant women and women of childbearing age who are likely to become pregnant to avoid eating any swordfish, shark, king mackerel, or tilefish.[2] Many states now recommend not consuming fish with mercury levels of 0.5 ppm or greater, such as sea bass, Spanish mackerel, and freshwater pike. For more information on individual state advisories consult http://www.epa.gov/waterscience/fish/.

Health Effects of Mercury in Fish

Mercury is a potent neurotoxicant that interferes with the development and function of the central nervous system. When ingested by a pregnant woman, it can cross the placenta and expose her fetus. A spectrum of health effects has been observed following exposure, with the severity of effects depending largely on the amount and timing of exposure.[3]

Children and the developing fetus are most vulnerable to mercury exposure. Prenatal exposure from maternal consumption of highly contaminated fish can cause later impairments in children. Recent epidemiologic studies have found that children exposed to even low levels of mercury before birth experience subtle symptoms of neurologic damage. Specific effects include poor performance on neurobehavioral tests, particularly on tests of attention, fine motor function, language, visual-spatial abilities (e.g., drawing), and memory.[4] Affected children will likely have to struggle to keep up in school and might require remedial classes or special education.

Mercury exposure prior to pregnancy is as critical as exposure during pregnancy because it persists in tissues and is slowly excreted from the body. The first weeks of pregnancy also represent a critical time for fetal development. Women of childbearing age and pregnant women are therefore the most important members of the population in terms of mercury exposure.[5]

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