

ATTACHMENT 3

EPA, HEALTH EFFECTS

<http://www.epa.gov/mercury/effects.htm#meth>

Mercury

Health Effects

People in the U.S. are mainly exposed to methylmercury, an organic compound, when they eat fish and shellfish that contain methylmercury. Whether an exposure to the various forms of mercury will harm a person's health depends on a number of factors (below). Almost all people have at least trace amounts of methylmercury in their tissues, reflecting methylmercury's widespread presence in the environment and people's exposure through the consumption of fish and shellfish. People may be exposed to mercury in any of its forms under different circumstances. The factors that determine how severe the health effects are from mercury exposure include these:

- the chemical form of mercury;
- the dose;
- the age of the person exposed (the fetus is the most susceptible);
- the duration of exposure;
- the route of exposure -- inhalation, ingestion, dermal contact, etc.; and
- the health of the person exposed.

Mercury exists in three chemical forms. They each have specific effects on human health.

- [Methylmercury](#)
- [Elemental mercury](#)
- [Other mercury compounds](#) (inorganic and organic)

Methylmercury effects

For fetuses, infants, and children, the primary health effect of methylmercury is impaired neurological development. Methylmercury exposure in the womb, which can result from a mother's consumption of fish and shellfish that contain methylmercury, can adversely affect a baby's growing brain and nervous system. Impacts on cognitive thinking, memory, attention, language, and fine motor and visual spatial skills have been seen in children exposed to methylmercury in the womb. Recent human biological monitoring by the [Centers for Disease Control and Prevention in 1999 and 2000 \(PDF\)](#) (3 pp., 42 KB,

[About PDF](#)) shows that most people have blood mercury levels below a level associated with possible health effects. [More recent data](#) from the CDC support this general finding.

Outbreaks of methylmercury poisonings have made it clear that adults, children, and developing fetuses are at risk from ingestion exposure to methylmercury. During these poisoning outbreaks some mothers with no symptoms of nervous system damage gave birth to infants with severe disabilities, it became clear that the developing nervous system of the fetus may be more vulnerable to methylmercury than is the adult nervous system.

For more information on fish consumption advisories across the country, visit [EPA's fish consumption web pages](#).

In addition to the subtle impairments noted above, symptoms of methylmercury poisoning may include; impairment of the peripheral vision; disturbances in sensations ("pins and needles" feelings, usually in the hands, feet, and around the mouth); lack of coordination of movements; impairment of speech, hearing, walking; and muscle weakness. People concerned about their exposure to methylmercury should consult their physician.

Mercury and Cancer. No human data indicate that exposure to any form of mercury causes cancer, but the human data currently available are very limited. Mercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. Scientists only observed these health effects at extremely high doses, above levels that produced other effects. When EPA revised its [Cancer Guidelines](#) in 2005, the Agency concluded that neither inorganic mercury nor methylmercury from environmental exposures are likely to cause cancer in humans. More technical information is available in [volume V of the 1997 Mercury Study Report to Congress \(PDF\)](#) (349 pp., 1.2 MB, [about PDF](#)) (see especially pages 47, 80, 107, and 161 of the file).

Additional Information:

Additional information on the health effects of methylmercury is available from the IRIS database at <http://www.epa.gov/iris/subst/0073.htm> and EPA's Methylmercury Water Quality Criterion Web site at <http://www.epa.gov/waterscience/criteria/methylmercury/index.html>. You can also visit the Agency for Toxic Substances and Disease Registry (ATSDR) [toxicological profile for mercury](#).