

Mercury

Description/Chemical Forms:	Sources/Routes of Exposure:	Health Effects:
<p>Inorganic: compounds combine with chlorine, oxygen, or sulfur; also called “mercury salts”</p> <p>Organic: compounds combine with carbon, most common form in the environment is methyl mercury</p> <ul style="list-style-type: none">Bacteria capable of synthesizing methane convert inorganic mercury into organic mercury through a vitamin B analog called Metallothionein	<p>Sources: either naturally occurring in the environment as cinnabar ore or anthropogenic, such as the burning of fossil fuels or waste incineration</p> <p>Main Routes of Exposure:</p> <ul style="list-style-type: none">Ingestion-consumption of high-mercury fish species including but not limited to shark, swordfish, and Chilean sea bass; dental amalgams contain 50% metallic mercury and small amounts are released through chewing and/or teeth grindingInhalation of mercury vapors in occupational settings or dermal absorption from mercury-based thermometers are also exposure routes.	<p>Biomagnification: methylmercury bioaccumulates in the muscle tissue of large predatory fish species and thus the cycle continues in the humans that consume these species</p> <p>Teratogenic: methylmercury is absorbed through the GI tract and can cross both the blood brain and placental barriers</p> <ul style="list-style-type: none">Target organs: kidneys and CNSHealth effects: blindness, deafness, paresthesia, kidney damageFetal effects: memory impairments, blindness, impaired cognitive function, abnormal extremities

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Diagnosis/Treatment Options:

A variety of tests can be used to determine exposure, including blood, urine, hair, and breast milk samples.

- Blood and urine: most useful three days after initial exposure due to half-life reduction of 50% every three days
- Hair: can be used to measure past exposure over many months or up to a year; the ends can be compared to the scalp to determine exposures over the period of hair growth

Prevention Strategies:

The most common exposure to methylmercury is through fish consumption, therefore proper patient education of low-mercury species is useful, especially for sensitive sub-populations (i.e. pregnant women and children)

Advise patients to phase out mercury-based thermometers and dispose of mercury-containing products through community waste sites to limit exposure and keep water bodies free from contamination.

Links for Additional Information:

More information concerning mercury exposure and health effects can be found at the following sites:

<http://www.atsdr.cdc.gov/PHS/>

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

<http://www.in.gov/isdh/18882.htm>

<http://fn.cfs.purdue.edu/prodaai/main.php>

