



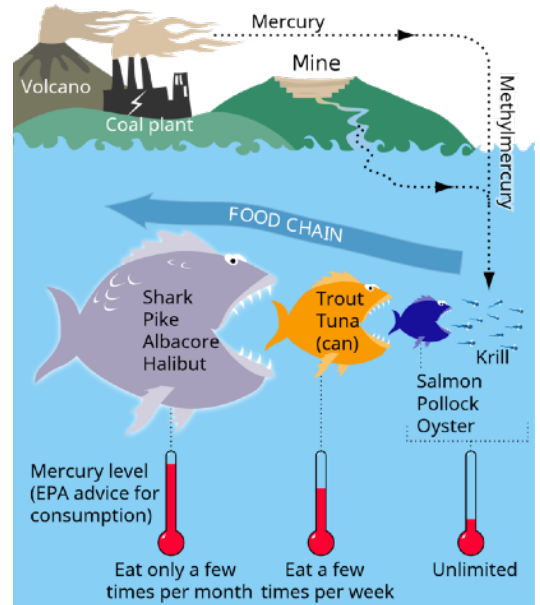
Why eating sharks is NOT healthy

Methyl mercury and human health consequences

Mercury - where does it come from?

Inorganic mercury is considered the most toxic element in the periodic table. It is 70% naturally occurring, 30% is introduced into nature by humans. Sources are e.g., mining, coal-fired power plants and the concrete industry. If mercury enters the water cycle, it is converted by bacteria into organic mercury - methylmercury is formed. Absorbed by microorganisms, it enters the food chain and accumulates in the food chain. The older and larger a fish gets, the more methyl mercury it accumulates in its tissues over its lifetime. This affects all long-lived fish, specifically shark, swordfish and tuna.

In addition to mercury, large, long lived predators such as sharks also accumulate other toxins such as PCBs, Arsenic, lead, and DDTs.

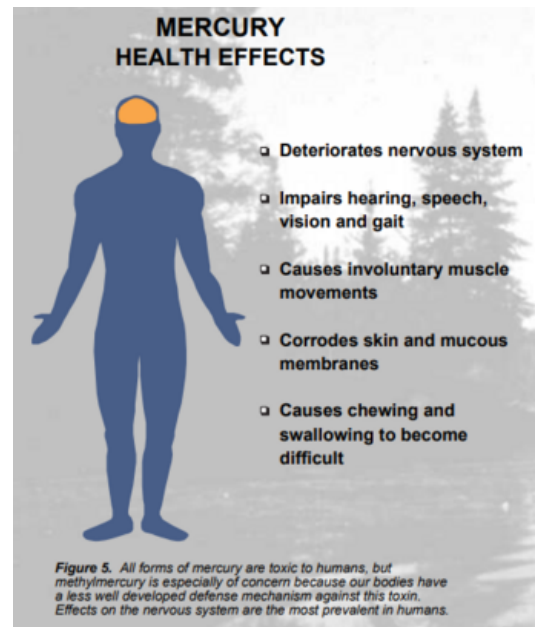


https://en.wikipedia.org/wiki/Mercury_in_fish

Methyl mercury - the health consequences.

Methylmercury is not immediately excreted by the human organism but continues to accumulate in the organs through repeated consumption. It has a half-life of 25 years in the human body. This means that only after 25 years 50% of the toxin is broken down. Methyl mercury often breaks through natural barriers in the human body, causing massive damage. It passes through the intestinal wall, almost 100% enters the brain through the blood-brain barrier, and from the maternal circulation through the placenta into the unborn child.

It can cause irreparable brain and nerve damage, severe kidney damage, malformations in unborn children, infertility and possibly cancer.



USGS Sources: Public Domain. Visit Media.

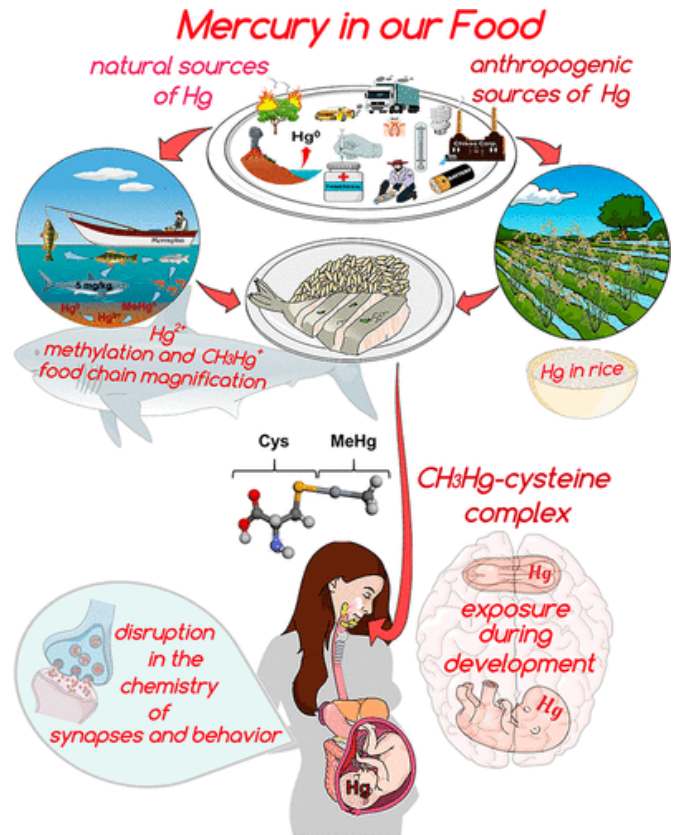
All forms of mercury are toxic to humans, but methyl mercury is especially of concern because our bodies have a less well-developed defense mechanism against this toxin. Effects on the nervous system are the most prevalent in humans.

The economic consequences

In the EU, every third child is born with an altered brain structure due to the mother's fish consumption. This is a particular problem in Mediterranean countries, where more fish is traditionally eaten.

A study by public health and environmental authorities from 17 European countries and the Department of Environmental Medicine at the Harvard School of Public Health in Boston/USA makes the economic consequences clear. The scientists estimate that more than 1.8 million children within the European Union are born with relevant methyl mercury exposure each year. An estimated 200,000 newborns are born with exposure levels above the WHO limits. Quote WHO: The primary health effect of methylmercury is impaired neurological development. Therefore, cognitive thinking, memory, attention, language, and fine motor and visual spatial skills may be affected in children who were exposed to methyl mercury as fetuses.

Source: <https://www.who.int/news-room/fact-sheets/detail/mercury-and-health>



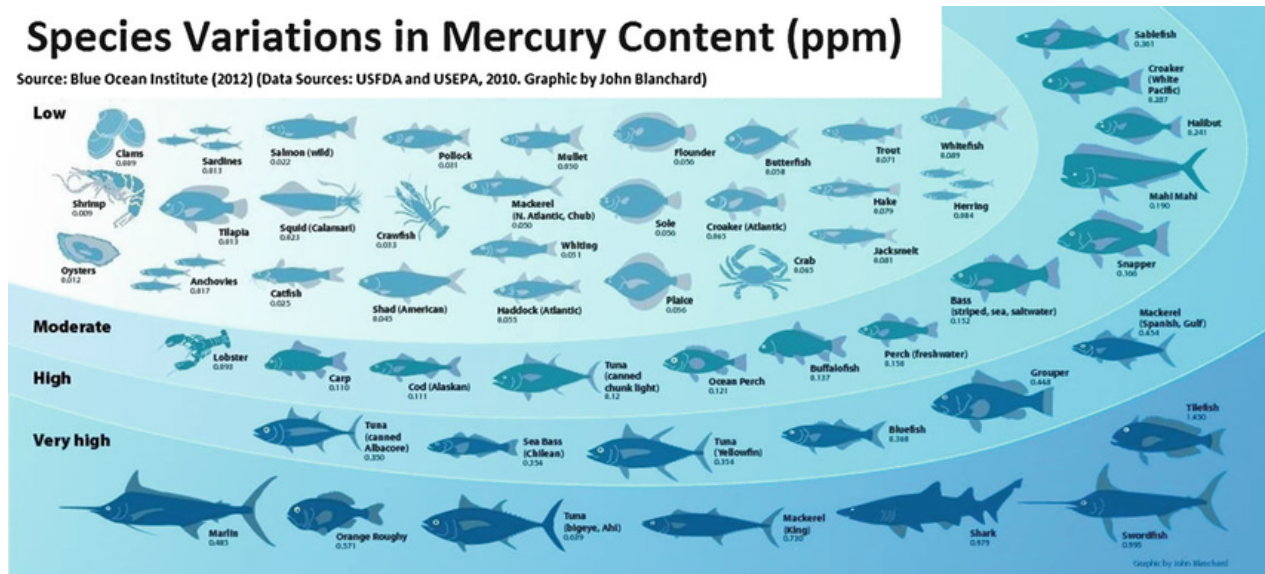
The impairment of the children's intellectual abilities, estimated at 600,000 IQ points per year, results in an economic loss of between 8000 to 9000 million euros per year.

International Governments warn

The WHO, the European Food Safety Authority (EFSA), as well as German ministries advise women of childbearing age, pregnant women and children not to consume long-lived predatory fish such as shark, swordfish and tuna. Unborn life, children and adolescents are five to ten times more susceptible to permanent damage from methyl mercury exposure by the time they reach adulthood.

Sources: Bellanger M, Pichery C, Aerts D, Berglund M, Castaño A, Cejchanová M, Crettaz P, Davidson F, Esteban M, Fischer ME, Gurzau AE, Halzlova K, Katsonouri A, Knudsen LE, Kolossa-Gehring M, Koppen G, Ligoocka D, Miklavčič A, Reis MF, Rudnai P, Tratnik JS, Weihe P, Budtz-Jørgensen E, Grandjean P; DEMO/COPHES. Economic benefits of methylmercury exposure control in Europe: monetary value of neurotoxicity prevention. Environ Health. 2013 Jan 7; 12:3. doi: 10.1186/1476-069X-12-3.

A calculation example shows how quickly toxic levels are reached by consuming blue shark



The European Food Safety Authority (EFSA) specifies a TWI value (tolerable weekly intake) of **1.3 µg/kg** body weight and week for methyl mercury:

- ▶ A blue shark may contain up to 930 µg/kg methyl mercury (real test results from blue shark caught in the Azores, 2016).
- ▶ Using an average human body weight of 70kg, this would result in a maximum recommended total of 91 µg/kg methyl mercury.
- ▶ If this person eats 100g of the tested meat it corresponds to 93 µg/100g. Therefore exceeding the recommended maximum intake limit of Methyl Mercury in one meal.
- ▶ The highest tested raw blue shark meat so far contained 4690 µg/kg (sampling in a restaurant, Germany 6.4.2019). This could have dire health consequences for consumers. **It exceeds the EU's approved limit fivefold with the single consumption of just 100g of blue shark steak.**

Blue shark is not healthy and does not belong on our plate, neither at home nor in a restaurant.

Additional Resources:

<https://eur-lex.europa.eu/legal-content/DE/TXT/PDF/?uri=CELEX:32022H1342&from=EN>

Peter Jennrich, Quecksilber – eine der Schädlichsten Substanzen weltweit, 2015

<https://www.ig-umwelt-zahnmedizin.de/wp-content/uploads/quecksilber-studie-jennrich-04062015.pdf>

<https://www.efsa.europa.eu/de/press/news/121220>