

# What is the risk? Dental amalgam, mercury exposure, and human health risks throughout the lifespan.

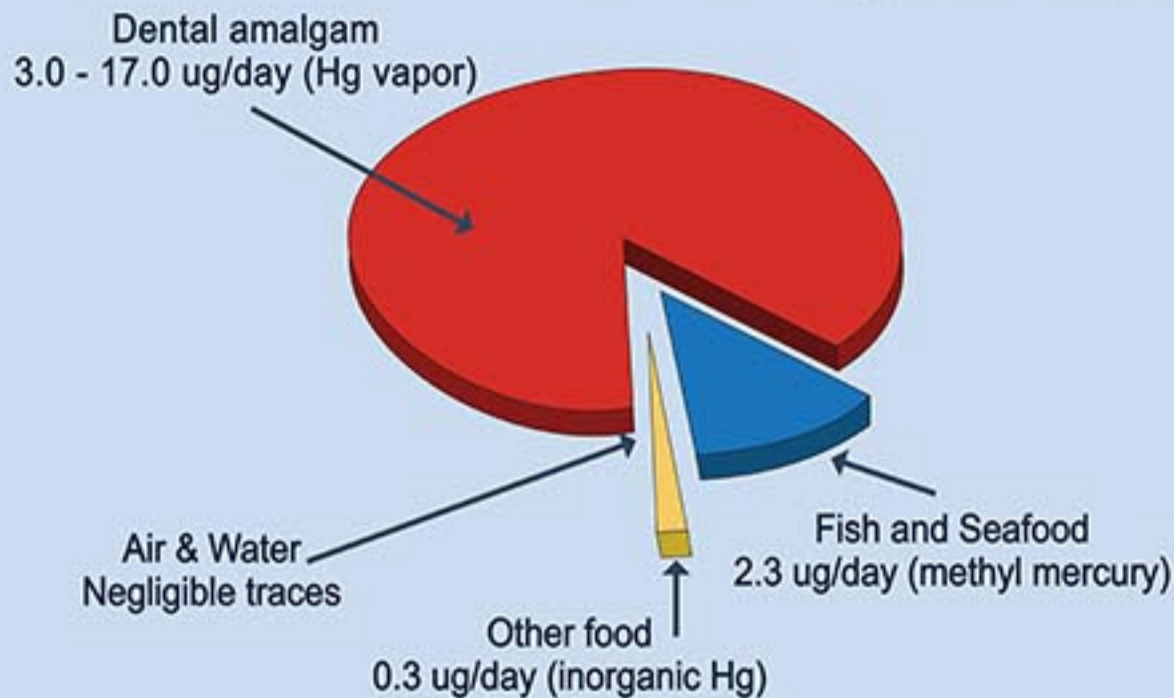
Kall J, Just A, Aschner M. Chapter 7 in Epigenetics, the Environment, and Children's Health across Lifespans. Springer. 2016.



All silver-colored fillings are dental amalgams, and each and every one of these fillings is comprised of 45%-55% mercury. Research has shown that mercury is continuously emitted from amalgam fillings, and it is absorbed and retained in the body.

## Sources of Human Mercury Exposure

(World Health Organization [WHO], 1991)



## Dental Mercury Exposure and Risk

- Toxic effects of this mercury exposure vary by individual.
- One or a combination of symptoms can be present and can change over time.
- Symptoms can take many years to manifest themselves.
- 67 million Americans exceed the intake of mercury vapor considered "safe" by the U.S. EPA.
- 122 million Americans exceed the intake of mercury vapor considered "safe" by the California EPA.
- As of July 1, 2018, the EU has banned dental amalgam fillings for children under 15 and pregnant and breastfeeding women.

An estimated 80% of the mercury vapor released by dental amalgam mercury fillings is absorbed by the lungs and passed to the rest of the body, particularly the brain, kidney, liver, lung, and gastrointestinal tract. The half life of metallic mercury varies depending on the organ where the mercury was deposited and the state of oxidation.

Mercury deposited in the brain can have a half life of up to several decades.

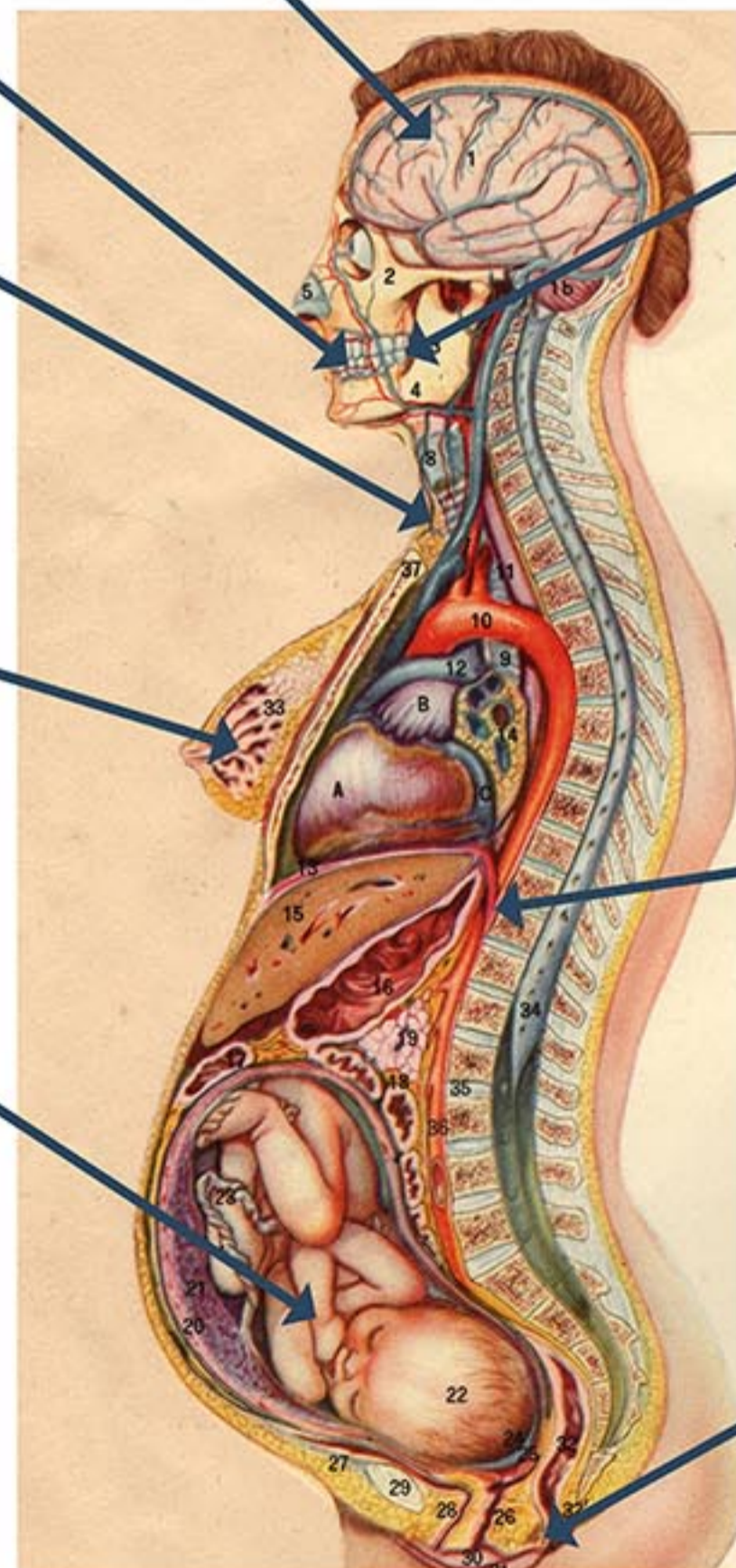
Mercury vapor taken into the body binds to sulfhydryl groups of protein and to sulfur-containing amino acids throughout the body. Mercury vapor, which is lipid soluble, can cross the blood-brain barrier with ease and is converted into inorganic mercury in the cells by catalase oxidation. This inorganic mercury is eventually bound to glutathione and protein cysteine groups.

Studies that have found the mercury concentration in breast milk increases as the number of amalgam fillings in the mother increases.

The half life of mercury in the whole-body and kidney regions has been estimated at 58 days.

Maternal mercury levels are known to impact the fetus. Research on fetal and infant risks from dental amalgam has provided significant data associating the number of maternal amalgam fillings with mercury levels in cord blood; in the placenta; in the kidneys and liver of fetuses; in fetal hair; and in the brain and kidneys of infants.

Patients with amalgam fillings excrete over ten times more mercury in their feces than those without mercury fillings. It has been estimated that in the U.S., this is over 8 tons of mercury flushed out to sewers, streams, and lakes per year.



## Epigenetics of Dental Mercury

A growing volume of recently published scientific research is examining how mercury exposure, including that from dental amalgam fillings, can pose highly significant risks to individuals with specific genetic traits including the CPOX4, APOE, BDNF, MT, COMT, MTHFR, and PON1 polymorphisms.

## Health Conditions Associated with Dental Mercury Exposure

Allergies, especially to mercury	Alzheimer's disease	Amyotrophic lateral sclerosis (Lou Gehrig's disease)
Antibiotic resistance	Autism spectrum disorders	Autoimmune disorders/immunodeficiency
Cardiovascular problems	Chronic fatigue syndrome	Complaints of unclear causation
Hearing loss	Kidney disease	Micromercurialism
Multiple sclerosis	Oral lichenoid reaction and oral lichen planus	Parkinson's disease
Periodontal disease	Psychological issues such as depression and anxiety	Reproductive dysfunction
Suicidal ideations	Symptoms of chronic mercury poisoning	Thyroiditis