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


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.

### 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.

### Sources of Human Mercury Exposure

- **Dental amalgam**: 3.9 - 17.8 ug/day (Hg vapor)
- **Air & Water**: Negligible traces
- **Fish and Seafood**: 2.3 ug/day (methyl mercury)
- **Other food**: 0.3 ug/day (inorganic Hg)

(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.

### Mercury deposition in the brain

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.

### Health Conditions Associated with Dental Mercury Exposure

<table>
<thead>
<tr>
<th>Condition</th>
<th>Other Related Conditions</th>
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</thead>
<tbody>
<tr>
<td>Allergies, especially to mercury</td>
<td>Alzheimer’s disease</td>
</tr>
<tr>
<td>Antibiotic resistance</td>
<td>Amyotrophic lateral sclerosis (Lou Gehrig’s disease)</td>
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<tr>
<td>Cardiovascular problems</td>
<td>Autism spectrum disorders</td>
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<tr>
<td>Chronic fatigue syndrome</td>
<td>Autoimmune disorders/immunodeficiency</td>
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<tr>
<td>Hearing loss</td>
<td>Kidney disease</td>
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<tr>
<td>Multiple sclerosis</td>
<td>Micronutrientation</td>
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<tr>
<td>Periodontal disease</td>
<td>Parkinson’s disease</td>
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<tr>
<td>Psychological issues such as depression and anxiety</td>
<td>Reproductive dysfunction</td>
</tr>
<tr>
<td>Symptoms of chronic mercury poisoning</td>
<td>Thyroiditis</td>
</tr>
</tbody>
</table>

### 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.

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

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 takes per year.