Mercury/Silver Amalgam Fillings & Neurotoxicity
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Necessary Elements for Harm

1. Exposure
2. Intake
3. Body Burden
Necessary Elements for Harm

1. Exposure >100 papers
   a) *The Dangerousness of Mercury Vapor*
   b) ADA/NIDR National Institute of Dental Research
      JADA (169-171) Vol.109, 1984
      Workshop on the biocompatibility of metals in dentistry
      Serial measurements of intra-oral air mercury;
      Estimation of daily dose from dental amalgam.
   d) Masi, J. V.; Status Quo and Perspectives of Amalgam
      and other Dental Materials International Symposium
      Proceedings (Friberg, L., Schrauzer, G. N., eds) Thieme-Verlag, Stuttgart
      Corrosion of amalgams in restorative materials:
      the problem and the promise.

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Necessary Elements for Harm

1. Exposure
   Liquid droplets of mercury
Necessary Elements for Harm

1. Exposure

2. Intake

Hahn LJ; Kloiber R; Vinyo MJ; Takahashi Y; Lorscheider F. FASEB J. 3:2641-2646; 1989

Dental "silver" tooth fillings: a source of mercury exposure revealed by whole-body image scan and tissue analysis.
Necessary Elements for Harm

2. Intake

Mercury concentrations in the human brain in relation to exposure from dental amalgam fillings.

Necessary Elements for Harm

3. Body Brain Burden


Necessary Elements for Harm

Accumulation and Biotransformation of Mercury and its Relationship to Selenium after Exposure to Inorganic mercury and Methyl Mercury. A Study on Individuals with Amalgam Fillings, Dental Personnel, and Monkeys.
Necessary Elements for Harm

3. Body Burden


Dental amalgam contains inorganic mercury. In this study, however, total mercury was measured because of the bi-directional conversion between inorganic and organic mercury in humans.

The overall results from neutron activation analysis averaged more than 3.7 times higher than the overall results from atomic absorption.
Necessary Elements for Harm

3. Body Burden

Correlation of dental amalgam with mercury in brain tissue.

Data from this project demonstrate a positive correlation between the number of occlusal surfaces of dental amalgam and mercury levels in the brain (p < .0025 in white matter).

Necessary Elements for Harm

1. Exposure
2. Intake
3. Body Burden

Evidence of Harm

1. Pathophysiology
2. Maternal fetal transfer
3. Vulnerable subsets
Evidence of Harm

1. Pathophysiology


Mercury from dental silver tooth fillings impairs sheep kidney function.

Evidence of Harm

1. Pathophysiology

Mercury released from dental “silver” fillings provokes an increase in mercury and antibiotic resistant bacteria in primates oral and intestinal flora.

2. Maternal fetal transfer

   Number of Amalgam Fillings in Pregnant Rats and Mercury Concentration in Their Fetuses.

b) Drusch G, Schupp I, Reinsle R & Boidar G.  
   Mercury burden of human fetal and infant tissues.
Evidence of Harm

2. Maternal fetal transfer

Possible fetotoxic effects of mercury vapor: a case report.

Evidence of Harm

2. Maternal fetal transfer

Maternal-Fetal Distribution of Mercury (203 Hg) Released from Dental Amalgam Fillings.

Evidence of Harm

2. Maternal fetal transfer

![Graph](image-url)  
Fig. 11: Concentration of Hg from maternal dental amalgam in blood and bile of 3-5 fetal lambs exposed in utero for various times after amalgam placement.
Evidence of Harm

2. Maternal fetal transfer

![Graph showing maternal fetal transfer](image)

Fig. 1. Average concentration of IgG from dental antigens in maternal blood and saliva for 10 days after injection of antigens. Each point represents mean of 5 animals.
Evidence of Harm

2. Maternal fetal transfer

- Diagram showing maternal fetal transfer with graphs indicating levels over time.
Evidence of Harm

2. Maternal fetal transfer


Mercury from Maternal “Silver” Tooth Fillings in Sheep and Human Breast Milk

Evidence of Harm

3. Vulnerable subsets

a) Haley, B. Mercury Toxicity: Medical Veratis 2 (2005) 1-8

Genetic Susceptibility and Synergistic Effects.


Reduced Levels of Mercury in First Baby Haircut of Autistic Children


The association between a genetic polymorphism of coproporphyrinogen oxidase, dental mercury exposure and neurobehavioral response in humans.
Evidence of Harm

1. Pathophysiology → YES
2. Maternal fetal transfer → YES
3. Vulnerable subsets → YES

No Evidence of Benefit

1. Cost of filling vs. cost of damage
   a) To the tooth
   b) To the health
2. Cost of gum disease
3. Cost of Lichen Planus
4. Cost of Neurological impairment

Cost of Amalgam Use

1. Cost of filling vs. cost of damage
   a) 75% Decrease in tooth strength
   b) Fracture
   c) Crown
   d) Root canal
   e) Future cost of dental care
**Cost of Amalgam Use**

2. Amalgam linked to gum disease
   - 90% of people have gum disease
   - 66% Cause of tooth loss

3. Amalgam linked to Lichen Planus
   - A precancerous lesion
   - 60% of lesions spontaneously resolve with amalgam removal

**Cost of Harm**

4. Cost of Neurological impairment

Leonardo Trasande, Philip J. Landrigan, and Clyde Schechter Public Health and Economic Consequences of Methyl Mercury Toxicity to the Developing Brain Vol. 113 #5 May 2005 Environmental Health Perspectives

As an example, about 4 percent of babies, or about 180,000, are born each year in the US with blood mercury levels between 7.13 and 15 micrograms per liter. That level of mercury, the group concluded, causes a loss of 1.6 IQ points.

\[
180,000 \text{ U.S. babies} \times \$31,800 \text{ for lost IQ} = \$5,724,000,000
\]

And total cost may exceed $20 Billion Dollars
FDA Panel Questions

2. Does the draft FDA White Paper objectively and clearly present the current state of knowledge about the exposure and health effects related to dental amalgam?

Score: 13 voted NO to 7 voted YES

FDA Panel Questions

3. Given the amount and quality of the information available for the draft FDA White Paper, are the conclusions reasonable?

Score: 13 voted NO to 7 voted YES

IAOMT Print Submissions

1. An Evaluation of Dental Amalgam Mercury Release and Corresponding Toxicological Concerns
   Professor Boyd Haley
2. Toxicity and Biocompatibility of Amalgam: Historical Perspective
   Professor Boyd Haley
3. The Doctrine of Learned Intermediary and Dr. Brian Robert Reeves Eng. and Mr. Levi Eng
   Attorney in Medicine, Missouri Amalgam Injury Survivors
4. A Scientific Case Against Amalgam
   A Scientific Response to the ADA Position on Safety
   Scopus of Scientific Work with amalgam
5. Smoking, Tobacco, and Mercury Studies
7. Amalgam Studies: Emerging Basic Principles of Mercury Toxicity J. Mutter
8. Dental Personnel Mercury Risk
9. Mercury in Dental Amalgam A Neurotoxic Risk Herbert Needleman
10. Testimony by Philippe Grandjean, Mercury MACT Rule Hearing Augusta Maine 2004
11. Alzheimer Disease: Mercury as pathogenic factor and apolipoprotein E as a moderator J. Mutter
30. Neuropsychological and Renal Effects of Dental Amalgam in Children D.
29. Neurobehavioral Effects of Dental Amalgam in Children T.
27. Critique of CAT B. Haley
26. Critique of the CAT methodology D. Kennedy
25. Ethical Complaints and Scientific Facts of CAT
24. Proposed Accurate Informed Consent for CAT
23. Critique of the Children
21. Mercury Induced Alzheimer
20. Early Downward Trends in Neurodevelopmental Disorders Following Removal of Dental Amalgam and Mercury levels in Autopsy Tissues G.
19. Dental Amalgam and Mercury levels in Autopsy Tissues G.
18. Reduced Levels of Mercury in first Baby Haircuts of Autistic Children A. Holmes
The Calgary Medical School team repeated the amalgam mercury distribution study and found that primates spread mercury within two weeks. installing amalgam fillings in wild caught monkeys caused antibiotic resistant organisms to develop in the intestinal flora within two weeks. Dr. Summers contacted the research team in Calgary and asked to participate in the next project. She found that most vulnerable to harm from heavy metal exposure during development. The next experiment looked at spread of mercury from installed amalgam fillings into a fetus since the fetus is the most common obstetric mammal. The first experiment with sheep was a distribution tracer study that found out where the mercury spread to once released from the fillings. First they measured the intra-oral levels of mercury generated using a standardized technique. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then they used a computer simulation to determine what body burden they would likely produce. Next they measured these levels over time and found that they slowly drop back to baseline after 90 minutes. Then
Milk Biological Trace Element Research Vol. 56, 1997

dentists.

experiments has measured significant neurological impairment in amalgam bearers and dental personnel as well as mercury-free dental amalgam.

The German Department of Health had banned amalgam use in women and children following the International Academy of Oral Medicine and Toxicology in Düsseldorf in 1992. Members of the dental profession protested that they hadn’t been given an opportunity to observe and discuss test results. The damage to the sheep's kidney from amalgam was given before the American Physiological Society.

Dr. Ziff reported an extensive list of diseases that have been linked to amalgam in the peer reviewed scientific literature including periodontal disease. The damage to infants from the ingestion of mercury released from amalgam must be addressed by reduced exposure to amalgam fillings. The destruction of life saving scientific studies by the destruction of amalgam fillings is a challenge to the integrity of research. The destruction of amalgam fillings prior to completion of studies is a challenge to the integrity of research.

Mercury Release From Dental Amalgam

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Leong CCW, Syed NI, Lorscheider FL. Retrograde Degeneration of Neurite Membrane Structural Integrity of Nerve Growth Cones Following in vitro Exposure to Mercury NeuroReport Vol. 12 #4, 2001. You can watch this video and animation on the IAOMT web site at www.iaomt.org. The video from this research shows that the introduction of 100 times less mercury than found in the cerebral spinal fluid of amalgam bearers into a cell culture of growing nerve cells immediately halts growth and produces neurofibrillary tangles similar to those seen in Alzheimer’s Disease.


Dental amalgam is the predominant source of human exposure to mercury. Human daily dose of mercury from various sources:

- Dental Amalgam = 3.0-17.0µg/day (Hg vapor)
- Fish and Seafood = 2.3 µg/day (methylmercury)
- Other food = 0.3 µg/day (inorganic Hg)
- Air & Water = Negligible traces

“A specific no-observed--effect level (NOEL) cannot be established.”

In 1991 Dr. Murray Vimy our founder participated in the WHO assessment of the daily dose received from amalgam in Genoa, Italy. The conclusions of this expert ad hoc committee are now in the Criteria document 118. Email: Murray Vimy <dr-vimy@shaw.ca>