



# Institute for Science in Medicine

## **DENTAL AMALGAM**

### **THE PROBLEM**

Dental amalgam (“amalgam”) is a major restorative material used by dentists since the mid-19th century. Though it now has competition from many other filling materials, amalgam remains a safe and cost-effective way for dentists to repair decayed teeth. Since the 1970s, invalid claims that amalgam’s mercury content is toxic have persuaded many people to have fillings needlessly replaced with more costly materials such as gold, porcelain or “composites.”

### **BACKGROUND**

Amalgam was introduced to the Western world in France in the 1830s.<sup>1</sup> It is a mixture of mercury with an alloy of silver, tin, copper and zinc to form a strong restorative that is easy to use.<sup>2</sup> Together, these elements form tight chemical bonds, making a stable alloy in which the mercury content is safe for humans.

Numerous studies have found only extremely small amounts of mercury in the body originating from amalgam, at levels far below that which could cause any adverse effect.<sup>3,4</sup>

Since dentists have a much higher exposure to mercury vapor than the general public, due to drilling out old amalgam fillings and placing new ones,<sup>5</sup> it has seemed prudent to look for evidence of increased disease among that population. The American Dental Association (ADA) has collected data on the health and causes of death of American dentists for many years and run voluntary mercury level tests at dental conventions.<sup>6</sup> Their data show that dentists have no higher levels of death or disease than the general public.<sup>7</sup>

A number of other studies have compared the health of cohorts of patients with and without amalgam fillings and found no correlation with the incidence of mental or medical conditions. One study, for example, surveyed more than 1,000 women and found no relationship between their health problems and the size or number of their fillings.<sup>8</sup>

The ADA has long held that amalgam is safe and asserts that “the removal of amalgam restoration from the non-allergic patient for the alleged purpose of removing toxic substances from the body, when such treatment is performed solely at the recommendation or suggestion of the dentist, is improper and unethical.”<sup>9</sup>

A meta-analysis published in 1989 by the Fédération Dentaire Internationale (World Dental Foundation) concluded that there was no scientific evidence of adverse effects from amalgam, save extremely rare cases of mercury hypersensitivity.<sup>10</sup>

## Specific Anti-Amalgam Claims

In the 1970s a dentist in Colorado alleged that the mercury content of amalgam was the cause of a wide variety of diseases and conditions and in 1985 he published a book that promoted these allegations.<sup>11</sup> By 1993, a survey indicated that 50% of Americans believed the mercury in amalgam could cause illness.<sup>12</sup> The US Department of Health and Human Services (HHS) responded that year with a scientific review, reassuring that “there is no evidence at present that the health of people with amalgam is compromised in any way.”<sup>13</sup> In 2008, the European Commission’s Scientific Committee on Emerging and Newly Identified Health Risks reaffirmed, “dental amalgam is a safe material to use in restorative dentistry with respect to patients.”<sup>14</sup>

The 1985 book also asserted that amalgam fillings had “negative electrical current” and needed to be removed in a specific sequence.<sup>11</sup> By 1991, Consumer Reports became sufficiently concerned to reassure its readers that amalgam was safe.<sup>15</sup> The National Institutes of Health (NIH) responded by publicly announcing, “Available data do not justify discontinuing the use of any currently available dental restorative materials or recommending their replacement.”<sup>16</sup> In the mid-1990s, the dentist who originated the amalgam scare had his license revoked for gross negligence and other professional misconduct.<sup>11</sup>

Anti-amalgam activists have consistently charged that mercury vapor “leaking” from amalgam fillings caused a plethora of diseases, including Alzheimer’s disease, multiple sclerosis, depression, digestive problems, and leukemia. Several questionable medical devices and lab tests were promoted to diagnose mercury poisoning, but these have been demonstrated unreliable in detecting mercury toxicity.<sup>11</sup> In 2004, HHS released a comprehensive review of 300 peer-reviewed studies, published subsequent to its 1993 review, and again concluded that, “current data are insufficient to support an association between mercury release from dental amalgam and the various complaints that have been attributed to this restoration material.”<sup>17</sup>

One particularly prominent claim against amalgam has been that many people are hypersensitive to mercury and suffer allergies and chronic fatigue syndrome from their fillings.<sup>11</sup> No scientific evidence supports this belief; cases of immune hypersensitivity traceable to dental amalgams are exceedingly rare. Despite millions of amalgam fillings, the 1991 investigation by the NIH found, “A hypersensitivity reaction to mercury from amalgam ha[s] been reported in about 50 cases since 1905. It is far from certain, however, that these cases were true immunologic reactions.”<sup>16</sup>

## Financial Impact

The removal of sound amalgam fillings to treat alleged “mercury poisoning” has been reported to cost as much as \$10,000 to remove all of a patient’s amalgam. Replacement additionally risks tooth and nerve damage. Patients undergoing such a procedure are further advised to buy into various detoxification plans involving the purchase of numerous supplements.<sup>11</sup>

As some activists call for the elimination of amalgam, the ADA estimated in 2007 that the impact of not being able to get amalgam fillings would “fall disproportionately on the disadvan-

taged populations” and estimated that such a policy would in its first year cost the USA “upwards of \$8.2 billion.”<sup>18</sup>

## **DISCUSSION**

Over many decades, billions of amalgam fillings have been used to treat tooth decay. This widespread experience and numerous studies have demonstrated not only the safety and efficacy of amalgam, but also its cost-effectiveness. Amalgam fillings make effective dental care more practical and affordable — and hence more widely available to every socio-economic stratum — than is possible with any of its alternatives.

Anti-amalgam activists have created concern and even panic among many citizens regarding the safety of amalgam. So-called “Holistic” dentists (a/k/a “biological dentists”) who advertise their restoratives as “mercury free” help to create unfounded fears in the public. Dentists who replace sound amalgam for the purpose of reducing “mercury toxicity” in the body are putting their own financial interests above the welfare of their patients. Moreover, in some jurisdictions, state dental licensing boards can and will suspend or revoke the dental license of dentists for removing amalgam restorations without scientifically valid reasons.

Journalists who lend credence or “balanced” coverage to anti-amalgamist claims are helping to create a false scientific controversy and contributing to placing the health of the public in jeopardy.

## **NEEDED POLICY**

To avoid false concerns about oral health, the lay public needs to know the scientific case for the safety and cost-effectiveness of dental amalgam. Dental professional organizations, and their members, are an indispensable source of reliable information for the public.

Satisfactory performance of placing an amalgam restoration needs to be one of the requirements for obtaining a dentistry license. Removal of stable amalgam fillings, when done for the purpose of preventing or curing any non-dental disease or condition, needs to be regarded as substandard dental practice and to be sufficient grounds for the revocation of a dentist’s license.

Claims that removal of stable amalgam fillings confers a health benefit need to be classified as violations of false-advertising laws. Actual removal of stable amalgam fillings for non-dental reasons needs to be regarded as fraudulent, and vigorously prosecuted as such.

Unless done for the purpose of preventing or curing a dental disease or condition, removal of a stable amalgam filling and its replacement with non-amalgam material, needs to be regarded as medically unjustified by all third-party payers of healthcare coverage, including public health-care systems, health insurers, and managed-care organizations.

Courses in the economics, safety and use of amalgam as a dental restorative material need to be part of the required curriculum at any accredited school of dentistry.

Because dental amalgam is a nuanced technical issue that is subject to rumor-mongering and misinformation, readers are best served by journalists and editors who fact-check with reli-

able and authoritative sources, and balance their published reports in accordance with the weight of the facts.

**Approved by ISM Board of Directors**  
**29 August 2012**

### **FURTHER READING**

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- <sup>3</sup> Berglund A & Molin M, “Mercury vapor release from dental amalgam in patients with symptoms allegedly caused by amalgam fillings,” *European Journal of Oral Science*, 1996 Feb; 104(1):56-63. [[abstract](#)]
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- <sup>6</sup> Naleway C, Chou HN, Muller T, Dabney J, Roxe D & Siddiqui F, “On-site screening for urinary Hg concentrations and correlation with glomerular and renal tubular function,” *Journal of Public Health Dentistry*, 1991 Mar; 51(1):12-17. [[abstract](#)]
- <sup>7</sup> “Dentists’ health results analyzed. Average urinary mercury levels found lower,” *ADA News*, 1985 Apr 15; 16(8):10.
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- <sup>9</sup> Council on Ethics, Bylaws and Judicial Affairs. [Principles of Ethics and Code of Professional Conduct](#). (Chicago: American Dental Association, 2012 Apr):10.
- <sup>10</sup> Fédération Dentaire Internationale. “Technical Report 33: Safety of dental amalgam.” *International Dental Journal*, 1989; 39(3):217.
- <sup>11</sup> Barrett SJ, *op. cit., supra*.
- <sup>12</sup> Bradbard L, “Dental amalgam: filling a need or foiling health?” *FDA Consumer*, 1993 Dec; 27:22.
- <sup>13</sup> PHS, *op. cit., supra*.
- <sup>14</sup> European Commission, *op. cit., supra*.
- <sup>15</sup> “The mercury in your mouth: you can avoid amalgam fillings or even replace the ones you have, but should you?” *Consumer Reports*, 1991; 56:316-319.
- <sup>16</sup> Office of Medical Applications of Research, *op. cit., supra*, p. 18.
- <sup>17</sup> US Department of Health and Human Services, Life Sciences Research Office, Trans-agency Working Group. *Review and analysis of the literature on the potential health effects of dental amalgams*. Final Report, 2004 Jul; p. 7. [[executive summary](#)]
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