
National Council Against Health Fraud

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Position Paper on Amalgam Fillings



This statement was written in response to claims that the mercury content of amalgam fillings causes toxic amounts of mercury to enter the body. Advocates of this belief are seeking to ban amalgam use and to force dentists and dental organizations to compensate all persons who claim that amalgam has damaged their health. The National Council Against Health Fraud believes that amalgam fillings are safe, that anti-amalgam activities endanger public welfare, and that so-called “mercury-free dentistry” is substandard practice.

Background History

Dental amalgam has been widely used for over 150 years. It is made by mixing approximately equal parts of elemental liquid mercury (43 to 54 percent) and an alloy powder (57 to 46 percent) composed of silver, tin, copper, and sometimes smaller amounts of zinc, palladium, or indium [1]. Although some forms of mercury are hazardous, the mercury in amalgam is chemically bound to the other metals to make it stable and therefore safe for use in dental applications.

The difference between bound and unbound chemicals can be illustrated by a simple comparison. Elemental hydrogen is an explosive gas. Elemental oxygen is a gas that supports combustion. When combined, however, they form water, which has neither of these effects. Saying that amalgam will poison you is like saying that drinking water will make you explode and burst into flames.

Amalgam is the most thoroughly studied and tested filling material now used. Compared to other restorative materials, it is durable, easy to use, and inexpensive. The American Dental Association, Consumers Union, the U.S. Food and Drug Administration, the U.S. Public Health Service, the World Health Organization, and many other prominent organizations have concluded that amalgam is safe and effective for restoring teeth [2-6]. It is safe to assume that if a better material is developed, the dental profession will adopt and use it.

Amalgam Safety

The amount of mercury released from installed amalgam and absorbed by the body is minuscule. Mercury is found in the earth’s crust and is ubiquitous in the environment. Thus, even without amalgam fillings, everyone has small but measurable blood and urine levels. Amalgam fillings may raise these levels slightly, but this has no practical or clinical significance.

The legal limit of safe mercury exposure for industrial workers is 50 micrograms per cubic meter of air for 8 hours per day and 50 weeks per year. Regular exposure at this level will produce urine mercury levels of about 135 micrograms per liter. These levels are much higher than those of the general public but produce no symptoms and are considered safe.

Most people with fillings have less than 5 micrograms per liter of urine. Nearly all practicing dentists have levels below 10 micrograms per liter, even though they are exposed to mercury vapor when placing or removing amalgam fillings and typically have amalgams in their own teeth. Thus, even with that exposure, the maximum levels found in dentists are only slightly higher than those of their patients and are far below the levels known to affect health, even in a minor way [7-12].

No illness has ever been associated with amalgam use in patients, except for rare instances of allergies. Moreover, there is insufficient evidence to assure that components of other restorative materials have fewer potential health effects than dental amalgam, including allergic reactions.

Improper Claims

Despite the above facts, some dentists and other health professionals advise people to avoid amalgam and to have their amalgam fillings replaced with other materials. Dentists who oppose the use of amalgam may refer to their approach as holistic dentistry, biological dentistry, or mercury-free dentistry.

Offbeat practitioners often diagnose “amalgam toxicity” or “amalgam illness” in patients who suffer from multiple common symptoms. One study found that people with symptoms they related to amalgam fillings did not have mercury blood and urine mercury levels that were significant or higher than those of a control group [12]. Several studies have found that many symptoms attributed to amalgam restorations are psychosomatic in nature and have been exacerbated greatly by information from the media or from a dentist [13-17]. False diagnoses of “mercury toxicity” are also made by many of the physicians who offer chelation therapy, a series of intravenous infusions that costs thousands of dollars.

The leading anti-amalgamist has been Hal Huggins, D.D.S., of Colorado Springs, Colorado. Huggins claims that “sensitive” individuals can develop emotional problems (depression, anxiety, irritability), neurological disorders (facial twitches, muscle spasms, epilepsy, multiple sclerosis), cardiovascular problems (unexplained rapid heart rate, unidentified chest pains), collagen diseases (arthritis, scleroderma, lupus erythematosus), allergies, digestive problems (ulcers, regional ileitis), and immunologic disorders (which he claims include leukemia, Hodgkin’s disease, and mononucleosis). He recommends replacing amalgam with other materials and taking vitamins and other supplements to prevent trouble after amalgam removal [18]. There is no scientific evidence that amalgam fillings cause or contribute to the development of these diseases.

Huggins’s dental license was revoked in 1996. During the revocation proceedings, the administrative law judge concluded:

- Huggins had diagnosed “mercury toxicity” in all patients who consulted him in his office, even some without mercury fillings.
- He had also recommended extraction of all teeth that had had root canal therapy.
- Huggins’s treatments were “a sham, illusory and without scientific basis.” [19]

A practitioner who does not wish to use amalgam can still practice ethically by giving appropriate advice and referring patients elsewhere when amalgam is the best choice. But advertising a practice as “mercury-free” is unethical because it falsely implies that amalgam fillings are dangerous and that “mercury-free” methods are superior.

Dubious Tests

The advice from anti-amalgam practitioners is typically accompanied by one or more tests that are either misinterpreted or completely bogus.

Breath Testing. Breath testing involves probing the mouth with a vacuum device after the patient chews gum vigorously for several minutes. The procedure causes tiny

amounts of mercury to be released from amalgam fillings and deposited on a gold foil within the device. Because people only chew during a small part of the day, the resultant readings are much higher than the average amounts released per 24 hours. In addition, the amounts deposited the foil are artificially high because most mercury vapor is exhaled rather than absorbed by the body and the device remeasures the same air several times, which inflates the reading. The readouts of the device are also raised by the presence of traces of foods, bacterial gases, and other substances commonly found within the mouth.

Urine Testing. Because mercury is ubiquitous, the body reaches a steady state in which tiny amounts are absorbed and excreted. Thus, mercury is commonly found in people’s urine. Mercury can also be found in the blood, because this is the major medium for transporting materials around the body. Large-scale studies have shown that the general population has urine-mercury levels below 10 micrograms/liter. Industrial workers, and dentists, who have regular exposure to mercury vapor also have low values. Urine testing, which is a fairly reliable indicator of chronic exposure, is best performed on a 24-hour urine specimen. Urine mercury levels can be temporarily raised by administering a chelating agent such as DMSA or DMPS, which collects the small amounts of mercury from the body, concentrates them, and then forces them to be excreted. In other words, mercury that normally recirculates within the body is now bound and excreted. The urine level under such circumstances is artificially raised above the steady-state level. The use of a chelating agent before testing should be considered fraudulent.

Blood Testing. Mercury is excreted by the kidneys, which filter the blood. The mercury levels of blood are lower than those of urine and therefore more difficult to detect. Even at high levels of mercury exposure, industrial workers show blood concentrations in the parts-per-billion range, typically less than 5 parts per billion. In this range, the amounts are too small to identify the type of mercury or its source. Urine mercury testing gives a more meaningful picture of exposure and is also more accurate because the mercury is more concentrated.

Skin Testing. Some anti-amalgamists administer a “patch test” with a dilute solution of corrosive mercury salts that cause the skin to redden and possibly swell [20]. The reaction is misinterpreted as a sign of mercury allergy or toxicity.

Stool Testing. Fecal mercury levels are not an accurate indicator of mercury exposure. The amount found in stool reflects the amount eaten and not absorbed plus anything excreted in the stool. At best, a stool test might indicate that mercury entered the gastrointestinal tract, but it could not provide an accurate measurement of either exposure or what was absorbed into the body.

Hair Analysis. Hair analysis is performed by sending a sample of hair to a commercial hair analysis laboratory,

which issues a computerized report indicating the number of micrograms found and whether that amount should be considered harmful. This procedure is not valid. Hair contains trace amounts of mercury from food, water, and air, regardless of whether the person has amalgam fillings. Because hair can absorb mercury from external sources, amount of mercury it contains does not necessarily reflect the amount within the body. In addition, hair mercury testing cannot be standardized because hair thickness, density, shape, surface area, and growth rate vary from person to person. The laboratory used most for hair analysis is Doctor's Data of Chicago, which reports "toxic mineral" levels as "high" when the amounts are near the top of their "reference range." [21] This merely means that the specimen contained more than most other hair specimens handled by the lab. It does not mean that the level is abnormal or that the level within the patient's body is dangerous. Thus even if hair analysis were valid, the reporting process is not.

Electrodermal Testing. Some practitioners use quack diagnostic devices that are said to detect "electromagnetic imbalances." One wire from the device goes to a brass cylinder that the patient holds in one hand. A second wire is connected to a probe, which the operator touches to various points inside the mouth. This completes a low-voltage circuit, and the device registers the flow of current, which the operator misinterprets as abnormal.

Physical Harm

Inappropriate removal of amalgam fillings is usually followed by replacement with a more costly material. But removing good fillings is not merely a waste of money. In some cases, it results in significant damage or loss of the tooth. To remove an intact filling, it is necessary to drill into the tooth around the outer edges of the amalgam. If the filling is large or deep, the tooth can be significantly weakened and the heat from the drilling process can injure the relatively delicate tissues of the pulp beneath the filling. To this risks must be added the general risks of anesthesia and other types of mechanical injury that are uncommon but are inexcusable when a procedure is unnecessary.

In 1985, a \$100,000 settlement was awarded to a 55-year-old California woman whose dentist removed her amalgam fillings. Based on testing with a phony electrodiagnostic device, the dentist had claimed that six of her fillings were a "liability" to her large intestine [22]. In removing the fillings, the dentist caused severe nerve damage necessitating root canal therapy for two teeth and extraction of two others.

Regulatory Action

The American Dental Association Council on Ethics, By-laws, and Judicial Affairs has concluded that "removal of amalgam restorations from the non-allergic patient for the

alleged purpose of removing toxic substances from the body, when such treatment is performed at the recommendation or suggestion of the dentist, is improper and unethical." [23] The policy, initiated in 1986, was triggered in part by the case of an Iowa dentist who had extracted all 28 teeth of a patient with multiple sclerosis. The dentist received a 9-month license suspension followed by 51 months of probation.

Dentists who attempt to "diagnose" or "treat" "heavy metal toxicity", or who test patients for heavy metals by any means are not practicing dentistry. These activities fall outside the scope of dental licensure. Any dentist who believes a patient requires diagnosis or treatment for any medical condition outside of the scope of dentistry is obliged to make a referral to a physician or other health professional as appropriate. Failure to make such a referral should be considered negligence.

Selection of a material should be based only on its known clinical properties and performance for the particular placement situation, coupled with the needs of a patient. A dentist who excludes any material from possible selection for a given restoration on the sole basis of personal opinion or unsupported conjecture cannot be providing optimal services for all of his/her patients. Such a dentist may be denying a patient the benefits of a material that is most suitable for that patient's needs. Such denial should be considered unprofessional conduct.

No dentist is required to use amalgam. However, dentists who make false claims about amalgam safety create unnecessary patient anxiety, and undermine confidence in the profession. Such behavior should be considered unprofessional conduct. Consumers Union (CU) has concluded:

Dentists who purport to treat health problems by ripping out fillings are putting their own economic interests ahead of their patients' welfare. The false diagnosis of mercury-amalgam toxicity has such harmful potential and shows such poor judgment on the part of the practitioner that CU believes dentists who engage in this practice should have their license revoked [24].

Legal and Political Action

Class-action suits have been filed in Maryland and California claiming that patients have been harmed by amalgam fillings and that the American Dental Association (ADA) and state dental associations have engaged in unfair and deceptive trade practices as well as fraud and conspiracy to defraud by not informing patients that amalgam fillings contain mercury. The ADA has countered that the suits are part of a "coordinated attempt by some to have judges decide matters of scientific debate, and stifles discussion within the scientific community, most of whose members simply do

not agree with their views.” [25] In a news report, an ADA official referred to a California suit as “an egregious abuse of the legal system.” [26] NCAHF concurs with this assessment.

U.S. Representative Diane Watson (D-CA) has introduced a bill to prohibit interstate commerce of mercury intended for use in dental fillings by 2007. She does not appear to understand that the properties of chemical combinations can differ greatly from those of the individual ingredients that form them. Calling Watson “scientifically unsophisticated,” Time magazine science writer Leon Jaroff has urged Watson to get over her “amalgam hang-up” and “learn not to be taken in by quacks.” [27] NCAHF hopes that she will do so.

Recommendations

To Consumers

- There is no logical reason to worry about the safety of amalgam fillings.
- Anyone told that a urine mercury level produced after taking DMPS represents a toxic state is being misled.
- Avoid health professionals who advise you that amalgam fillings cause disease or should be removed as a “preventive measure.”
- Report any such advice to the practitioner’s state licensing board.

To Dental Organizations

- Issue clear and forceful guidelines indicating that unnecessary amalgam removal is unethical and unprofessional and that the diagnosis of mercury toxicity is outside the proper scope of dentistry.
- Issue a position statement about dubious mercury testing

To Dental Licensing Boards

- Practice standards should be based solely on scientifically gathered objective evidence.
- Classify as unprofessional conduct any advice that amalgam fillings are dangerous and therefore should be avoided or removed.
- Ban the use of hair analysis and chelating agents by dentists.
- Ban any advertising of “mercury-free dentistry” which falsely implies that amalgam fillings are dangerous and should therefore be avoided or removed.

To Legislators

- Do not be misled by false claims that amalgam is dangerous.
- Do not support special laws that would restrict or discourage amalgam use.

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