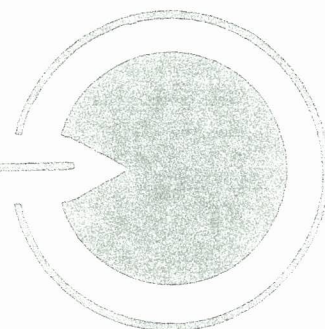


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SPECIAL ARTICLE

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PATIENT EXPOSURE TO MERCURY
FROM DENTAL AMALGAM FILLINGS
by
Michael F. Ziff & Sam Ziff

INTRODUCTION

For some of your patients, the chronic unstimulated release of mercury vapor from amalgam dental fillings may constitute an unrecognized risk to their health not previously considered.

Existing published scientific studies have concentrated on determining and quantifying the amount of mercury vapor released from amalgam fillings during function or other conditions stimulating the release of mercury vapor. These studies have evaluated the amount of mercury vapor contained in exhaled air under both unstimulated and stimulated conditions, or measured the amount of mercury vapor present intra-orally under both conditions. Only the "stimulated" values derived from these studies has been extrapolated and compared to an exposure standard. No one has previously quantified the total daily intake and possible contribution to total body burden resulting from the "unstimulated" release of mercury vapor from amalgam fillings 24 hours per day, 365 days per year, during the entire lifetime of such fillings. These unstimulated intake values represent the barest minimum daily intake before any consideration of function is added.

Defenders of dental amalgam fillings have admitted that patients are exposed to mercury from amalgam fillings, but claim that the mercury exposure is too small to cause any harm. It is apparent that this arbitrary and capricious position is based solely on a flawed assessment of existing stimulated release data without any consideration being given to other factors or the daily contribution of chronic unstimulated release of mercury vapor from amalgam fillings. Moreover, these defenders of amalgam fillings are unable to provide scientific documentation to support their position of harmlessness.

Consequently, responsibility to the interest of public health dictates that a risk assessment evaluation be made of the documented minimum mercury exposure from dental amalgam fillings in comparison to established mercury exposure standards. This investigation clearly determines that patient exposure to mercury from dental amalgam fillings constitutes a significant portion of the maximum intake and exposure standards established by the United States Environmental Protection Agency (E.P.A.) for protection of the general public from the effects of inhaled mercury vapor and total daily intake of all forms of mercury.

A number of research investigations published since 1979 have clearly established that mercury vapor is released from

intact dental amalgam fillings throughout the lifetime of these fillings. (1-6) These studies have confirmed the early results found by Stock in 1926. (7) It has also been confirmed that the release of mercury from amalgam fillings will be greatly increased by various intra-oral stimulation factors, such as chewing (1,2,4,5), toothbrushing (6), and hot fluids (8). Moreover, other investigations have revealed that mercury released from dental amalgam fillings will dissolve in saliva (9-13) and is also found in soft (14) and hard (15-17) tissues surrounding the fillings. Autopsy studies have confirmed that the mercury released from dental amalgam fillings does in fact contribute to the body burden of mercury in patients. (18-19)

No large scale, definitive studies investigating the effects of this mercury released from dental amalgam fillings have ever been published. The significance of the mercury exposure to patients bearing these fillings is, therefore, wholly unknown, purely speculative, and subject to considerable and distinctive personal bias. In view of the thoroughly acknowledged severe toxic nature of certain forms of mercury, callous neglect of the potential effects of this source of mercury on patients could forebode ominous consequences to the dental profession and its practitioners, as well as the recipients of these fillings.

Because of the lack of pathological and epidemiological investigations and the scientific documentation establishing that mercury is released from dental amalgam fillings and does enter the patient's body, the question of effects on the patient revolves around two questions; 1) how much mercury intake is harmless to patients, and 2) how much mercury from dental amalgam fillings is contributed to the body burden of patients?

HOW MUCH MERCURY INTAKE IS HARMLESS TO PATIENTS?

This question is thoroughly discussed in a previous issue of the Bio-Probe Newsletter. (20) Reference to that issue, which thoroughly reviewed the scientific literature and documents of organizations establishing exposure and intake standards for mercury in humans, clearly established that mercury (particularly in the vapor form) is so toxic that no toxic threshold can be determined. Even the United States Environmental Protection Agency so states in its document. (21) However, in view of the adamant refusal of amalgam advocates to acknowledge- or apparently even read- the scientific documentation, it would be helpful and revealing to select a reference point for investigating the harmful effects of patient exposure to dental amalgam mercury.

The previously mentioned issue of the Bio-Probe Newsletter set forth clearly and unarguably that scientifically and medicolegally there is only one established mercury intake and/or exposure standard that is applicable to this controversy in the U.S.A., that of the United States Environmental Protection Agency. (21) The E.P.A. has established a MERCURY INTAKE