



BIO-PROBE NEWSLETTER

Volume 2

September 1985

Issue 6

SPECIAL ARTICLE

The Road to Victory. Michael F. Ziff.....2

REVIEWS/ABSTRACTS

Quantization of Nickel and Beryllium Leakage from
Base Metal Casting Alloys. Covington, J.S. et al.....8

Low levels of mercury inhibit the respiratory burst in
human polymorphonuclear leukocytes. Malamud D. et al.....9

Studies in search of modifiers of the toxicity of mercurials
and speculations on its biochemical mechanism. Sharma D.C. et al....9

Prevalence of mercury hypersensitivity
in dental students. Miller E.G. et al.....10

An assessment of mercury in mouth air. Ehler M.F., Cardone M. Sr...10

Mercury in human breath from dental amalgams. Patterson J.E. et al. 11

Intra-oral air mercury released from
dental amalgam. Vimy M.J. and Lorscheider F.L.....11

Serial measurements of intra-oral air mercury: Estimation of
daily dose from dental amalgam. Vimy M.J. and Lorscheider F.L. 12

EDITORIAL

An open letter to the U.S. Surgeon General, U.S. Secretary
of Health and Human Services and the President of the
American Medical Association. Sam Ziff.....12

MATERIALS

Evaluation of glass ionomer cements as liners under
posterior composite restorations. Michael W. Hardee.....14

CASE HISTORIES

16

Owned, Published and Copyrighted, 1985 by Bio-Probe, Inc.
The Bio-Probe Newsletter is published bi-monthly.
Editorial office located at 4401 Real Ct., Orlando, FL 32808
Subscription price \$65.00 per year. Postage paid at Orlando

THE ROAD TO VICTORY
Michael F. Ziff, D.D.S.

After years of struggle and travail, victory is in sight!! Unmistakable signs of the demise of the mercury amalgam filling are readily apparent. As this will be a prime topic in the months to come, it is imperative that we summarize and are familiar with the progress that has been made in all areas of the controversy.

THE RELEASE OF MERCURY FROM DENTAL AMALGAM:

In 1926 Professor Alfred E. Stock scientifically demonstrated that mercury was not "locked into" dental amalgam. Since then, numerous studies, particularly those done at the University of Iowa Dental School in the 1970's and 1980's by Dr. Carl Svare and others, have confirmed the release of mercury from dental amalgam during function. Even the American Dental Association has finally acknowledged this fact (J.A.D.A., Vol. 109, Sept 1984). Recent studies (1985) done in New Zealand and Sweden have demonstrated that toothbrushing and hot fluids will increase the release of mercury from amalgam.

THE AMOUNT OF MERCURY RELEASED:

The new position of the American Dental Association is that not enough mercury is released to be harmful to patients unless they are hypersensitive to mercury. This publically stated position is dangerously speculative. If the A.D.A. were ever required to substantiate that position in a court of law they would be in dire jeopardy since, to date, no research has been done that determines the total amount of mercury released or its pathological effect on the patient. The A.D.A. position cannot be scientifically defended.

The research of Dr. Murray Vimy has just been published in the August 1985 issue of Journal of Dental Research. Utilization of the "Vimy Vapor Test" will permit practitioners to calculate a weekly dose of mercury vapor from dental amalgam and relate that dose to current World Health Organization standards.

Some champions of amalgam maintain that the release of mercury from amalgam in toxic amounts is impossible because the amalgam fillings would supposedly all be rapidly disintegrating when they reached the 40% mercury level. This argument is ludicrous and irresponsible. For the sake of argument lets assume, very liberally and graciously, that the N.I.O.S.H. TLV for mercury is valid; 0.05 mgHg/cubic meter as a time weighted average over a forty hour work week. Simple arithmetic calculation reveals that the amount of mercury required to provide that reading for a period of one year is 4.68 milligrams. The textbook on dental materials by Craig and Associates, states that the mass of amalgam used for the average filling is 780 mg of alloy plus mercury. The average filling would therefore contain 600 mg of mercury if initially 43% and up to 780 mg if initially 50%. At a loss of 4.68 mg per year (the N.I.O.S.H. toxic dose), it would take one average amalgam 17.09 to 55.56 YEARS to be reduced to the 40% mercury level (520 mg of mercury).

DOES THE MERCURY RELEASED FROM AMALGAM ENTER THE PATIENTS BODY?

It would be hard to conceive of circumstances whereby it wouldn't. However, there is no need for assumption. The two autopsy studies done in Europe in 1984 by Schiele and associates and Nylander and associates, establish and confirm that levels of mercury in the brain correlate to the number and surfaces of amalgam fillings present in subjects.

IS MERCURY FROM DENTAL AMALGAM READILY ELIMINATED FROM THE BODY?

At an amalgam controversy debate in Denver, Colorado in March of 1985 an eminent amalgam champion declared to over two hundred dentists that the mercury exposure from dental amalgam is eliminated from the patient's body (believe it or not, audio tapes of this debate are being distributed). This expert (??) offered no scientific evidence to support his bold (and foolhardy) declaration, which is diametrically contradictory to the results of the 1984 Schiele and Nylander autopsy studies.

In addition, scientific research has documented that a single dose of mercury is eliminated from the body in three different phases with half-times of 1) a few days (35% of the dose), 2) 30 days (50% of the dose), and 3) 100 days (15% of the dose). Amalgam victims are subjected to multiple doses every day. The contribution to body burden of mercury from amalgam fillings will be slowly cumulative over a period of time.

THE TOXICITY OF MERCURY TO HUMANS:

The established Threshold Limit Values (TLV's) for mercury are based only on the appearance of signs of neurological damage as an end point (ie-"tremors"). By their own admission no consideration is given to pathological damage to other organs and systems. For example, recent research at the University of Pennsylvania has determined that mercury exposure at environmental levels of mercury inhibits the normal protective function of human white blood cells.

If TLV's are to be utilized at all (a highly questionable posture) the Environmental Protection Agency (EPA) TLV of 0.001 mg Hg/cubic meter would be more logical. Mercury exposure from amalgam fillings is not limited to a 40 hour work week.

In 1972 renowned mercury experts Friberg and Vostal stated that there probably is no toxic threshold for mercury: They felt that the toxic effect of mercury was a linear dose-effect relationship.

TOXICITY OR "HYPERSENSITIVITY"?

The American Dental Association has publically declared that there is no reason to remove amalgam fillings unless the patient is hypersensitive to mercury. This position has ominous implications.

Does this mean that the ADA recommends removal of amalgams on all patients who are hypersensitive to mercury? Is the private practitioner negligent and liable if amalgams are placed or replaced in a hypersensitive patient? Is the practitioner who places amalgams defenseless and at risk because the ADA has publically absolved itself of responsibility? For personal protection, must every patient now be