A special note concerning identification of the February 1986 issue of Bio-Probe. Volume 3 Issue 1 was erroneously dated February 1985. To compound this error the opening paragraph of Part II on Detoxification in Volume 3, Issue 2, April 1986, again erroneously refers to Volume 3 Issue 1 as being dated February 1985. Please correct the dates on these issues.

This June issue of Bio-Probe should have contained Part III of the Detoxification series. However, the Special Article by Dr. Pleva as well as the other data presented in this issue was considered sufficiently important to defer Part III until the next issue.

SPECIAL ARTICLE
Jaro Pleva, Ph.D.

Dr. Pleva holds a Ph.D. in corrosion chemistry and has been a very vocal adversary regarding continued use of mercury amalgam as a dental filling material. Dr. Pleva can cite his own case history of mercury poisoning from amalgam fillings and clearance of medical problems after replacement of his mercury amalgam fillings as the initial basis for his professional interest in the subject of amalgam corrosion in vivo. The following information has been taken from a letter sent to Bio-Probe by Dr. Pleva with permission to use all or part. I have taken the liberty of paraphrasing some of the data:

The Swedish Social Welfare Board commissioned two professors in Odontology (Per-Olof Glantz, Malmo University and Maud Bergman, Umea University) to conduct a review of the risks of dental amalgam fillings deteriorating, releasing mercury, and causing a danger to health. In their report dated Nov 11, 1982, the two professors state (literal translation): "It must be stressed here, that in spite of extensive use of dental silver amalgam fillings,..., and in spite of clinical and roentgenological observations of individual amalgam fillings over several decades, a systematic dissolution of such fillings has never been reported." The summary of the report stated: "In our opinion, the available scientific literature does not contain any scientifically confirmed results, which would indicate a clinical systematic deterioration of silver amalgam fillings. Correctly handled, the fillings which fulfil existing specifications, do not set free toxic amounts of mercury and/or other heavy metals over long time periods."

The report by Glantz and Bergman is the main foundation for the official position of Swedish state authorities regarding the question of mercury poisoning from dental amalgam. Because of this, Dr. Pleva has written in rebuttal to the Attorney-General and to the Ombudsman (The Swedish Parliamentary Commissioner for the Judiciary and Civil Administration) providing the following data:

In reality, there is a glut of published data, showing that amalgams are unstable and prone to corrosion attack (dissolution). The many reports in international scientific journals could hardly have escaped the professors attention. Therefore, their declaration is a
conscious untruth, providing false information threatening the health of millions of people.

Appended hereto are quotations from some of the readily available major dental journals clearly showing that a systematic degradation of silver amalgam normally occurs both in vivo and in vitro. This fact has been known for a long time. However, neither dentists nor toxicologists and physicians are aware as to how much mercury is actually released due to corrosion attack. Consequently, the toxicologic non-consideration of the health risks related to mercury being released from amalgam fillings is to a large degree based on the false claims and premise that amalgam is a "stable" alloy. Therefore, the toxicologic risk evaluation should also be considered invalid.

The doctors have accepted the claims about "stability" of amalgam and their belief in this false information could result in incorrect diagnosis of thousands and probably millions of mercury filling poisoned patients.

Below are two examples of a simple estimate of the mercury amounts corresponding to a measured intensity of the corrosion attack:

On the basis of depth of corrosion attack.

1. Espevik and Mjor (in Degradation of Amalgam restorations in vivo. Corrosion and degradation of implant materials, ASTM STP 684, 1079, pp.316-327) at NIOM (Scandinavian Institute for Dental Materials) have observed depth of corrosion .2 mm after 3 years in vivo.

For a case of general corrosion of a filling containing 50% Hg this would give up to 130 milligrams Hg in 3 years, i.e., over 100 micrograms Hg/day from a surface of 1 cm².

The most corrosion sensitive gamma-2-phase Sn₇Hg contains about 20 weight-% mercury. Under the most optimistic assumption that the corrosion attack is restricted to the gamma-2-phase (which is not true), and only 10% of the fillings consist of gamma-2, the following amount of mercury can be released from 1 cm² surface:

\[(0.2 \times 10 \times 10) \text{ mm}^3 \times 2\% \times 0.4 \text{ mm}^3 \text{ Hg}\]

At assumed density of amalgam 11.5 g/cm³ the dissolved volume will give \[0.4 \text{ mm}^3 \times 11.5 \text{ mg/mm}^3 = 4.6 \text{ mg Hg released in 3 years, i.e. 4.2 micrograms/day.}\]

From a number of fillings with a total surface of 10 cm² it is 42 mcg/day.

On the basis of measured corrosion current.

2. Marek (in Acceleration of corrosion of dental amalgam by abrasion. J Dent Res. 63(7):1010-1013, July 1984) has investigated several types of amalgam. He found that the most corrosion resistant amalgam type corroded with a rate about 3 microamperes/cm², no abrasion included. According to Faraday's law and assuming a uniform distribution of corrosion current, the above current gives:

\[m = i \times t \times M\]

\[\text{---} = 250 \text{ mcg Hg/day from 1 cm}^2\]

\[\text{z.F.}\]
where \( m = \) amount of dissolved metal (g)
\( i = \) current density (A cm\(^{-2}\))
\( M = \) molecular weight (g mol\(^{-1}\))
\( t = \) duration of corrosion current (s)
\( z = \) number of electrons in reaction
\( F = \) Faraday charge 96485 Coulomb

Under assumption of non-uniform current distribution and its concentration to the gamma-2-phase (which is in reality not true), a rough calculation still gives 38 mcg Hg from 1 cm\(^2\) per day. During abrasion, the corrosion current increased several times.

The amounts of released Hg in the above examples should be compared to the recommended maximum daily dose in food for an adult, about 30 mcg. In the above examples, the catastrophic effects of galvanic cells gold - amalgam and increased mercury release due to crevice corrosion, increased temperature and wear of occlusal surfaces are still not included.

At this point, the following incredible fact must be stressed: The basic deficiency of most work intended to show the harmlessness of amalgam is that the scientific experiment is halted just at the point when the danger begins. For example, it is perfectly alright to report on the magnitude of corrosion current or how thick a layer of amalgam has corroded away. However, it appears that reporting how much mercury has been apparently set free by the measured corrosion attack and comparing this with known toxic limits or thresholds, is not acceptable.

Dr. Pleva goes on to discuss the work of T. Kallus which I have not included because of space. However, if anyone wishes to have the information just drop Bio-Probe a note.

APPENDIX: Quotations from published literature showing deterioration of dental amalgam fillings.

1. Skinner E.W. The Science of Dental Materials, W.B. Saunders Co. 1948, p 327: "It is well recognized that silver amalgam restorations tarnish, and occasionally corrode, in the mouth,... Tin is the principal product of the corrosion, although traces of silver and mercury are usually present. ... Owing to the fact that copper corrodes so readily in the mouth, copper amalgam restorations usually corrode in the saliva. ... Occasionally, a gold inlay is placed in contact with an adjacent proximal amalgam restoration, or an amalgam filling is placed in an opposing tooth, or perhaps a gold clasp touches an amalgam restoration. All such procedures are almost sure to cause a corrosion of the amalgam, since an electromotive force with considerable electromotive force is produced between the gold alloy and the amalgam (approximately 500 millivolts). Mercury is sometimes found in the gold alloy, which is thereby weakened. Such a condition is always a hazard to the health of the patient."

2. Mateer R.S. and Reitz C.D.: Corrosion of Amalgam Restorations. J Dent Res. 49:399, 1970: "Fifty extracted teeth containing amalgam restorations were examined metallographically. ... Two distinct types
of attack were observed. The first was a surface-layer corrosion of amalgam to layered deposits. This was observed, in varying degree, on every restoration. The second type was a deep penetration form of cracking, observed in about 10% of the restorations examined."

3. Jorgensen K.D. The mechanism of marginal fracture of amalgam fillings. Acta Odont Scand. 23:347, 1965: "Previous studies by Schoonover and Souder (1941) and others, have shown that corrosion of amalgam fillings consistently occurs on the surfaces enclosed by the cavity walls. The two authors demonstrated the presence of corrosion products in these areas, and found that the corrosion might be so far advanced that the amalgam had lost most of its strength.

The present author has demonstrated that similar corrosion products were of common occurrence in a great number of amalgam fillings in extracted teeth intentionally crushed to remove the fillings. Corrosion products could occur on any filling surface, but as a rule the layers were thickest on the side and thinnest on the bottom surfaces. Layers up to 10-20 µm in thickness were frequent, while layers exceeding 50 µm rarely occurred. ... in nearly all cases the heaviest corrosion attacks occurred in the marginal areas. ... Due to the corrosion of the amalgam margin, metallic mercury is set free. ... Liberation of metallic mercury due to corrosion can be demonstrated experimentally e.g. in the following ways: When amalgam is brought into contact with a plate of dental alloy in a 1% NaCl solution (37°C) a very severe corrosion occurs, which after a few days results in formation of substantial amounts of corrosion products, at the same time the gold plate is contaminated by mercury in the area which was in contact with amalgam. ... Occasionally the surface of amalgam specimens corroding in a NaCl solution at 37°C exhibits minute drops of mercury. ...

It can often be shown that those parts of an amalgam filling which are immediately adjacent to the corroding areas are relatively rich in mercury. ... high mercury content in amalgams will increase the risk of deep corrosion."

4. Jorgensen K.D., Saito Structure and corrosion of dental amalgams. Acta Odont Scand. 28:129, 1970: "Studies reported in this work show that well-condensed standard amalgam possess such a structure that their gamma-2-phase can be totally dissolved by corrosion. ... The corrosion of silver amalgams must be regarded as a major - possibly the principal - cause of the failure of silver amalgam fillings." (Attack depth 2.5 mm after 8 months exposure is reported for all the tested silver amalgam types)


6. Marek M. The corrosion of dental materials. Monograph, p. 331 "The most common form of degradation of amalgam restorations is the fracture of the margins. ...Although the fracture is a mechanical process, there is a substantial body of evidence that corrosion has an important role in the deterioration."
7. Soremark R., Diab M. and Arvidson K. Autoradiographic study of distribution patterns of metals which occur as corrosion products from dental restorations. Scand J Dent Res. 87:450, 1971: "Chromium, cobalt, gold and mercury can, for example, be released from dental restorations as a result of corrosion and these elements readily penetrate enamel, dentin and gingival tissues."

8. Espevik S. In vitro corrosion of dental amalgams with different Cu - contents. Scand J Dent Res. 85:631, 1977: "The thickness of the corroded area was about 50 um. ... Both the gamma-2-areas and Cu-Sn compounds inside the amalgam corroded as far as 160 um from surface."

9. Kozono Y., Moore B.K., Phillips R.W. and Swartz M.L. Dissolution of amalgam in saline solution. J Biomedical Mater Res. 16:767, 1982. "High-copper-type amalgams released a much larger amount of Cu than conventional type amalgams. ... The dissolution rate of Hg from the amalgams in saline solution increased after four months, although the amount was at a very low level compared with that of the other elements. High copper-type amalgams generally lost larger amounts of Hg than the conventional ones. ...Cu and Hg dissolved markedly at the later stages of the six-month immersion."

10. Schoonover I.C. and Souder W. Corrosion of dental alloys. JADA 28:1278, Aug 1941: "Corrosion cells can occur in either single metal restorations or between dissimilar metal restorations. Laboratory experiments show that severe corrosion occurs when amalgams are placed in contact with gold alloys in either dilute salt solutions or in artificial saliva, or when corroded amalgams come in contact with polished amalgams immersed in salt solutions. Both pitting and tarnishing of the amalgam surfaces were observed in these experiments. examined for evidences of corrosion."

11. Till T., Maly K. Zum Nachweis der Lyse von Hg aus silber amalgam von Zahnfullungen. Der Praktische Arzt 32:1042, 1978. (translation from German by Dr. Pleva): "The results confirm previous information and give in my opinion an unequivocal evidence, that Hg can become enriched up to more than 1200 ppm in teeth roots, when the teeth contained amalgam fillings. The Hg - content is dependent on the age of the filling, presence of dissimilar metals (gold, steel etc increase the dissolution) and on bacterial activity. In my opinion, the results of the investigation bring the conclusive proof, that also silver-amalgam fillings release mercury. ... Mercury, dissolved from amalgam fillings, can accumulate to measurable concentrations in different places of the chewing apparatus."

12. Sarkar N.K., Marshall G.W., Moser J.B. and Greener E.H. In vivo and in vitro corrosion products of dental amalgam. J Dent Res. 54:1031 1975: "Selective dissolution of the continuous tin - mercury phase, gamma-2 (Sn78Hg), of conventional dental amalgam has been accepted by most authors as responsible for the corrosion failure of amalgam restorations. ... The breakdown of gamma-2 releases free mercury which reacts with unreacted original Ag3Sn (gamma) to produce additional gamma-2 phase, and the corrosion cycle continues. ... Gamma-2 has disappeared completely. ... This investigation confirms
the earlier view that the gamma-2 phase of dental amalgam is prone to selective chemical attack."

Any correspondence should be addressed to Jaro Pleva, Ph.D., Pl 3079, S - 68300 HAGFORS, Sweden.

------------------------------------------------------------------------------------------------------------------------

REVIEWS/ABSTRACTS

There are two volumes of abstracts published annually by the Journal of Dental Research. I know how time consuming and difficult they are to read, having spent days doing just that. Over the next two or three issues I will attempt to include some of the more pertinent abstracts. The following abstracts were all contained in Volume 65, Special Issue, and reflect papers to be presented at the IADR meeting being held in The Netherlands, June 26-28, 1986. Just the Abstract # and Page # will be given as the citation:

Abstract 34, page 729. Thermal effect on mercury dissolution and microstructure of amalgams. Y.Takahasi et al. Sch of Dent. Aichi-Gakuin Univ. Nagoya, Japan. Previously, we studied the dissolution of Hg in 2 conventional and 4 high copper amalgams immersed in distilled water (6-45°C) for 2-6 days. Higher temperature increased Hg dissolution in 6 amalgams, but the amount was practically about the same for each alloy. X-ray diffraction showed no phase changes. In the present study, Hg dissolution under high temperatures was examined. Amalgam specimens (surface area 0.785cm²) imbedded in acrylic plates of 2 conventional [Non Zinc Luna Alloy, Hi Atomic M], of 2 blended [LUMI ALLOY, Dispersalloy] and of 2 single compositions [Tytin, Sybraloy] were hand condensed and stored at 37°C for 2 days and then polished. Each specimen was shaken (82rpm) while immersed in 10 ml of distilled water at 55, 65 or 75°C for 2, 4, or 6 days. The amount of dissolved Hg was evaluated using flameless atomic absorption spectrophotometry. Phase changes were examined by X-ray diffraction. These specimens were mounted, crosssectioned and polished for EPMA examination. The amount of Hg dissolution was the highest for Non Zinc Luna Alloy (P<0.01). Sybraloy was significantly higher than Hi Atomic M, LUMI ALLOY, Tytin(P<0.05 and Dispersalloy(P<0.01). Tytin was also significantly higher than Dispersalloy(P<0.05). B1 phase was observed in Hi Atomic M, LUMI ALLOY and Tytin at 65 and 75°C, also in Non Zinc Luna Alloy and Dispersalloy at 75°C. The existence of B1 phase in Sybraloy was not clear at any temperature. After immersion, the microstructures of cross-sectioned Non Zinc Luna Alloy and Sybraloy showed in increase in roughness and voids. All specimens showed increased roughness on their surface with temperature. Temperature affected Hg dissolution and the microstructure of the amalgam. The transition from phases yl to B1 was partly observed but the relationship between this phenomenon and Hg dissolution could not be clearly elucidated from this study.

************************
Abstract 35, Page 729. The relation between saliva and mercury vapor from amalgam restorations. Cruz A. et al. Dept of Prosthodontics, Karolinska Inst, Huddinge, Sweden. Previous studies have shown that mercury from amalgam restorations may be volatilized and blood mercury concentrations were found higher in patients with dental amalgams than in patients without. The purpose of the present study was to examine the relation between saliva and mercury vapour from dental amalgams.

Samples of unstimulated saliva were obtained from twenty six patients between 14:00 p.m. and 16:00 p.m. The secretion rate, pH and buffering capacity were determined and plaque index and gingival index were recorded. Intraoral mercury was measured with a mercury detector during twenty seconds. Then each subject was instructed to chew chewing gum for thirty minutes and the intraoral mercury levels were recorded.

Patients with secretion rates and buffering capacity values of unstimulated saliva lower than 0.5 ml/min and pH:4.5 respectively showed about twice as high mercury vapour levels as patients with lower secretion rates and buffering capacity values. No relation could be found between the number of amalgam surfaces and pre-chewing intraoral mercury vapour.

************************************************

Abstract 38, page 730. Surface characterization of amalgam using XPS. T.Hanawa et al. Hokkaido Univ. Sapporo, Japan and Baylor College of Dentistry, Dallas Texas. The surface compositions of dental amalgams must be investigated to understand the mercury release mechanism. This paper is the first report of the use of x-ray photoelectron spectroscopy (XPS) to study the surface film of aged amalgam. Triturated samples of 4 different amalgams (Velvalloy, V; Dispersalloy, D; Tytin, T; and Valiant, Va) were pressed between stainless steel sheets at a pressure of 14 MPa to form 10mm x 8mm x 1mm specimens. The specimens were aged in air for either 20 minutes, 1 day or 7 days. The chemical compositions and the electron binding energies of the surface elements (1-3 nm deep) were determined using XPS. Prior to analysis, the samples were cooled to below -20°C to suppress mercury evaporation. The bulk compositions of the amalgams aged for 7 days were also determined after removal of about 10 nm of material from the surface by argon ion sputtering. XPS showed that Sn was enriched at the surface of all 4 samples. The Hg and Ag were depleted. The surface segregation increased with increasing aging time. Zn was found to be enriched near the surfaces of V and D. Cu was depleted at the surfaces of T and Va. The photoelectron binding energies suggested that the surface Sn and Zn were oxidized, whereas the Hg, Ag and Cu remained in the metallic state. The analyses of the interiors of the samples aged for 7 days yielded chemical compositions close to those expected from the sample stoichiometries. The XPS results are conclusive evidence of segregation and oxidation phenomena on the surfaces of aged amalgams. The data can be explained by either of two effects: 1) Hg evaporation from the surface, or 2) preferential oxidation of the Sn (and Zn) at the surface. Support by the Japan Society for the Promotion of Science has made this research possible.

************************************************
Abstract #478, page 779. Evaluation of a new glass ionomer cement. V.A. Marker and D.L. Miller, Baylor College of Dentistry, Dallas TX. Widespread use of glass ionomers as liners under composite restorations has lead to the development of new products. The purpose of this study was to evaluate the properties of a new glass ionomer lining cement.

The material, G-C Lining Cement, was evaluated using the standards set by the ADA Spec. #8 & #61 for zinc phosphate and polycarboxylate cements. The properties tested were setting time, 24 hour compressive strength, solubility, film thickness, and bonding strength to dentin.

Mixed according to the manufacturer's directions, the setting time (5.2±0.6 min) and the 24 hour compressive strength (79.5±8.2 MPa) of the G-C Lining Cement met the standards (5 min and 75 MPa) set by Spec.#8 and exceeded the standards (9 min and 50 MPa) from Spec. #61. Solubility measurements of the glass ionomer lining cement (0.23±0.04%) were significantly less than glass ionomer restorative material (0.5±0.1%) and only slightly greater than the maximum for zinc phosphate cement (0.2%) Film thickness results (55±11 um) were twice the minimum values set by Spec. #8 and #61. However, because the materials' application is as a liner, the film thickness is acceptable. An important advantage of the G-C Lining Cement is the materials' ability to bond to dentin. The shear bond strength of the lining cement (1.8±0.2 MPa) was equivalent to the values for restorative glass ionomer (2.5±0.6 MPa).

These results have shown that G-C Lining Cement has properties equal or superior to zinc phosphate and polycarboxylate cements. These properties combined with the advantages of glass ionomers indicate that the G-C cement would be an acceptable for use as a composite liner.

******************************************************************************

Abstract #575, page 575. Examination of eugenol mutagenicity utilizing the mouse micronucleus test. C.J. Woolverton & P.G. Fotos, West Virginia University Medical Center, Morgantown, WV 26506.

Eugenol (2-methoxy-4-allyphenol) is routinely used in dentistry for its sedative and anodyne properties. Numerous studies demonstrate the apparent toxicity of eugenol to eucaryotic tissues. In addition, controversy exists as to whether this and closely related substances possess the ability to act as mutagens in vitro. Here, eugenol was evaluated in vivo to identify potential eucaryotic mutagenicity using the mouse micronucleus test. An LD_{50} dose for the intraperitoneal (IP) eugenol injection of Swiss-Webster (24gm) mice was established at a 7% dilution in sterile saline. 1% and 5% eugenol suspensions were therefore delivered in 250ul volumes (IP) to 18 mice, followed by a 24 hour booster dose. Quinacrine served as the positive control at 100mg/kg body weight, and the negative control received an equal volume of saline. Additionally, this protocol was repeated with 19 mice substituting a single 100ul oral (PO) dose regimen utilizing stainless-steel esophageal cannulation instead of the IP route. Identical controls were utilized using the PO dose. The mice were sacrificed at 30 hours, the femur bone marrows harvested, stained and examined for mutagenic response. Positive results for mutagenesis were observed reaching 70% of the positive control of the positive control for the
IP route (subtracting the negative control background values). This result was significant at P<0.001 (analysis of variance). The results for the oral delivery were also positive at 63% of the positive control (P<0.005). These results suggest that eugenol does present some mutagenic potential in eucaryotic systems. Eugenol currently enjoys vast use in periodontal dressings and as an endodontic medicament. In view of this and conflicting reports as to its relative safety, the toxic and mutagenic potential of this agent deserves further study.

END OF ABSTRACTS FROM VOL 65, JUNE 1986, JOURNAL OF DENTAL RESEARCH

**************************


"Lead and mercury are two common toxic industrial pollutants found in our living environment. The inorganic forms of these heavy metals enter food chains and end up in our food and drinks (Bryce-Smith and Waldron 1974; Koh et al. 1976). Many studies have been done on the uptake and toxicity of individual heavy metals in animal tissue (Berlin et al. 1966; Chisolm 1971; Sin et al. 1982). However, little is known about the interaction of lead with mercurial compounds in animal tissue. Congiu and his collaborators (1979) found that when lead nitrate was intravenously administered to mice followed by organic mercury via gavage, the accumulation of mercury in the kidneys was enhanced." In this study (using C3H mice) the authors examined the effects of separate or co-administered lead and inorganic mercury.

Some selected quotes: "The toxicity of lead is very complex. It is known to exert its toxic effect in part through interference with copper, zinc and iron metabolism (Niklowitz and Yeager 1973). But so far, very little work has been reported of its effect on mercury. ... are both known to complex with SH groups and other ligands in the tissues of the body, therefore, one could assume the decrease of total mercury uptake in the organs of mice might be due to the competition between the two metals for similar transport binding sites." ....

"The increase of Hg^{2+} in the spleen was encountered in the lead treated mice throughout the present studies." .... "Therefore, it is possible that both lead and mercury when administered at short intervals or combined together are both attracted to the SH groups of the circulating erythrocytes and thus damaged the erythrocytes more rapidly than the individual element alone."

The authors conclude by pointing out that the results of their study do not show the increased mercury content of the kidneys shown in other studies and suggest that this may be attributable to inorganic mercury not complexing with glutathione. If this latter point is true, additional research is of the utmost importance.

**************************

"Lead and mercury have been reported to alter selectively the rod component of the electoretinogram, and to inhibit the phosphodiesterase in rod outer segments which may be responsible for generating the rods' light response. The authors have investigated the effect of lead and mercury on the voltage response to light of rods, and compared these effects with those of the phosphodiesterase inhibitor papaverine. Lead and mercury, like papaverine, slow the light response. In addition, papaverine increases the light response amplitude while lead decreases it. Mercury initially increases and then decreases the amplitude. The late decrease in amplitude produced by mercury is associated with rod degeneration: an effect which may mimic degenerative diseases in which the rod phosphodiesterase is insufficiently active. These results demonstrate that the changes of electoretinogram induced by lead and mercury can be accounted for by the changes in receptor potential these heavy metals produce. The changes in receptor potential seen are consistent with mercury inhibiting rod phosphodiesterase, and with lead having an action in addition to phosphodiesterase inhibition."

The authors conclude their article with the following paragraph: "Our data also suggest that when retinal mercury levels are sufficient to have an effect on the response characteristics of rods, they will also lead to the destruction of rods. This is consistent with the finding that vision defects in humans and primates who are poisoned with methylmercury, but who have intact rods, appear to be central rather than retinal in origin."

***************


The authors describe a case report of a self-administered intravenous metallic mercury embolisation and their diagnostic protocols used. What I found so interesting about this paper was that the last paragraph was devoted to the diagnostic value of mercury urine levels: "Buxton et al (1965) point out that poisoning occurs when the elemental mercury is biologically oxidised to the soluble toxic mercuric ion. Mercurialism was not evident in our patient. Raised blood and urinary levels of mercury correlate well with the level of exposure, although a "normal" urinary level of not more than 30 ug/litre is found in 20% of exposed people (Jacobs et al, 1964). However, wide fluctuation in the hourly and daily urinary excretion of mercury in exposed persons, make its value as an index of improvement, with or without chelation therapy, questionable (Neal 1937; McNeil et al, 1984). Moreover the blood and urinary mercury levels show little or no correlation with the manifestation of mercurialism. There appears to be no level above which symptoms can be expected, or below which symptoms cannot occur."
EDITORIAL

DISCIPLES TAKE HEED
Sam Ziff

What do you think the position of posterior composites should be in dentistry today?

"Well, the trouble with posterior composites is that they're technique sensitive, and I don't think they are for the average dentist, especially if that person hasn't trained himself to understand these materials and the techniques associated with them. It's so much more complicated and difficult than amalgam if one is to get routinely good results. They're demanding of time and technique, and you have to be a good skilled operator to handle them well. Of course that's true of amalgams as well, but you take a person who is not so good, and he can do a better job with amalgam than he can with a posterior composite. Neither one of them may last as long as they should, but he can get away with amalgam for a little longer. Amalgam is more forgiving for as long as it lasts."

The above quotation was taken from Vol 1 - No 4 of The PCR Reporter and reflects Dr. Karl Leinfelder's response to the question posed by Dr. Roel Wyman.

Why I am I starting this editorial by citing a statement pertaining to the critical nature of placing posterior composites? Because I want to focus your attention on the fact that it doesn't have anything to do with giving mercury patch tests, diagnosing mercury toxicity by using an amalgameter, using the amalgameter to determine positive or negative readings of various metal restorations in the guise that this is essential to successful treatment, selling your patients "special supplements" to remove mercury from their bodies and making claims that amalgam or the mercury vapor escaping from amalgam fillings is responsible for all the ills of mankind. None of the aforementioned results of attending certain seminars have anything to do with the practice of dentistry or your competency as a dentist in placing posterior composite restorations. Those of you who are blindly following the scientifically unsupportable protocols being advocated and taught, and even stipulated as a requirement to belong or subscribe to the publications of this particular organization, have placed yourselves in a position of vulnerability.

Because of this vulnerability, there appears to be a general movement by various State regulatory agencies to focus on those dentists who publically espouse the above scientifically unsupportable protocols, doctrines, philosophies (it really doesn't matter what you call them).

It is apparent from the number of cases being brought to my attention where formal charges have been filed by a State Board of Professional Regulation or Licensing that a great many of you don't place much credence on the various articles and editorials we have published admonishing, advising, informing, and begging you to stick within defensible acceptable protocols in the conduct of your practice.
It should also be apparent, that those of you who continue to advocate and use the scientifically unsupportable protocols previously outlined, should not be surprised or angered by the consequences of your actions.

Your responsibility by law, regulation, professional and moral ethics, is to insure that your patients have been informed of the scientific research related to the potential toxicity of amalgam fillings and/or the mercury vapor being released by such fillings. Beyond that the patient must be given the prerogative of making their own judgement and decision and exercising their right to freedom of choice independently.

IF YOU INSIST ON CONTINUING TO CONFORM TO UNSUPPORTABLE PROTOCOLS THEN IT WOULD APPEAR IMMINENTLY FAIR TO ME THAT THE PERSON OR ORGANIZATION THAT IS CHARGING YOU A FEE TO TEACH AND INDOCTRINATE YOU AND WHO UTILIZES NATIONAL PUBLIC MEDIA TO ACTIVELY ADVOCATE THE PRACTICE OF SUCH PROTOCOLS, SHOULD BE COLLATERALLY RESPONSIBLE IN THE DEFENSE OF SUCH PRACTICES, WHEN AS A DISCIPLE, YOU ARE FORMALLY CHARGED BY A STATE REGULATORY AGENCY.

CASE HISTORIES

The following case history was received in the mail and was dated May 2, 1986. The patient lives in Yonkers, NY:

"I wish to relate my anecdotal experiences with dental amalgams. In 1978, at age 30, following a severe flu, I was left with extreme fatigue. I consulted two internists but all their testing indicated I was in good health. I finally resolved the problem nine months later when upon the advice of a nutritionist, I drastically changed my eating habits from a junk food to a natural, whole food diet. I gradually gained my strength back and began to feel okay. However, I was left with severe, multiple food allergies which effected my mood and energy level. A small sample of some of the substances I was allergic to is: corn, citrus, meat, eggs, fish, all dairy except yogurt, all spices, all vitamins and minerals from tablets, apples, tap water, etc. In addition I could not wear synthetic clothing, plastic sunglasses or use soaps or shampoo or shaving cream.

I sought advice from many different disciplines including chiropractic, homeopathic, naturopathic and others. Although my health benefitted from some of these treatments, none had any effect upon my allergies.

In 1984, I went for allergy testing and treatment to a clinical ecologist, again, with no alleviation, but he did recommend that I have my amalgam fillings removed since they had been linked to cerebral allergies. But because of the cost and since, by avoiding all
the things I knew I was allergic to, I felt alright, I hesitated. Finally in March of 1986, after having to get rid of a new piece of furniture made with a glue containing formaldehyde, I decided to have my fillings changed.

During the next six weeks, my dentist __________, of the Holistic Dental Association, replaced my amalgams with composite fillings. He worked on 16 teeth with about 35 surfaces I believe, plus replaced an amalgam with a gold crown. As each quadrant was done, my allergies subsided to the point that I am now allergic to nothing.

I hope this information can be helpful to your readers and patients. Please share this any way you can. Also, thank you for writing your book The Toxic Time Bomb. I thought it was very well written and it played a part in my decision to get rid of my amalgams."

-------------

FORUM

For some months now I have been corresponding with Michel Schouker who is President and Editor in Chief of Association Francaise d'Odontostomatologie Preventive. Enclosed is a copy of a brochure Michel sent me announcing the 1st World Congress in Oral Prevention to be held in Paris, France July 9-11, 1987. It is being billed as "Prevention without Border" and at the present time indications are that representatives from 35 different countries are expected to be in attendance. Anyone desiring to correspond with Dr. Schouker can write him at 170 rue Ordener 75018 Paris-France.

***************

The following information was provided by Ms. Grace Girdwain of Burbank, IL. Ms Girdwain sent me a copy of a letter from the Illinois Department of Public Health from which I am excerpting the following: "This letter is in response to your letter of February 27 concerning the use of .01% thimerosal in DPT vaccine. As you stated in your letter, there has been research into the health effects of using thimerosal in some topically applied medications and optic solutions. I am not aware of specific research involving the effects of its use in DPT vaccines."

(my comment: It would be interesting to see some research studies investigating whether DPT without the mercury (thimerosal) would have the same adverse effects attributable to the present formulations.

***************

Dr. Victor Penzer has sent me a flyer announcing their next seminar to be given at Boston University, November 14-15, 1986. I have enclosed a copy of the flyer for those of you interested in attending.

Dr. Robert Baratz, who is famous for his un referenced diatribe on the amalgam controversy that was published in the Harvard Medical School
Health Letter and who was also quoted in the other "classic and erroneous" unreferenced distortion of the dental mercury issue printed in the March issue of Consumer Reports, is going to be debating Dr. Penzer on the mercury issue. As soon as I get more information from Dr. Penzer, I will let everyone know where and when this great event will take place.

However, I have to tell you all that after listening to the audio tapes of the presentation made by Dr. Baratz as a participant in the recent debate on the mercury controversy, that took place at the April meeting of the Long Island Dental Society, I am in awe of this "Ph.D. Great Debater". As a rebuttal to peer reviewed scientific literature quoted by the opposition in their presentations, Dr. Baratz arbitrarily and summarily dismissed most of the research cited on mercury toxicity as being flawed, or misquoted, or not applicable to the issue. I am reminded of the classic joke defining what the various degrees meant, i.e., B.S., well that means exactly what it sounds like, and M.S. means more of the same and Ph.D., well that really means piled high and deep.

**************************

The Michigan Dental Association has taken a very precipitous action as reflected in the following Associated Press news release of April 23, 1986:


Lansing, Mich, (AP) - Dentists who urge patients to replace silver fillings because of mercury content are violating the Michigan Dental Association's code of ethics and could be ousted from the 4,900 member group, an officer said Wednesday.

The association's 102 delegates made such recommendation an ethical violation by adopting a resolution when they met in Detroit last week, said John Nolan, executive director.

"The feeling in the House of Delegates was that replacement of amalgam fillings due to mercury content ... was not justified," Nolan said. The resolution will be published in the group's journal sometime this summer but became effective as soon as adopted, he said. Ethical violations can result in reprimand, temporary suspension of membership or loss of membership, said Nolan, who called an ouster "pretty drastic and seldom used."

A dentist who loses membership in the state group cannot participate in the group's insurance programs, receive the association journal or attend its meetings and continuing education programs, he explained. The association represents about 80% of the dentists actively practicing in Michigan, he said.
"It does not affect his right to practice dentistry," Nolan added. Dental Licenses fall under the authority of the state Board of Dentistry within the state Department of Licensing and Regulation.

The resolution, in part, reads: "To advocate to a patient the removal of serviceable silver amalgam restorations solely to substitute a material that does not contain mercury is unwarranted and a violation of the Michigan Dental Association standards of ethics."

Nolan said any disciplinary proceedings would start with a complaint filed by a patient, dentist, insurance administrator or member of the general public to the state group or a local subdivision. Revocation of membership, which can be appealed, automatically ends membership in the American Dental Association, he said.

Dentists Samuel Mallory of Lansing and Thomas Minguske of Charlotte decided more than a year ago to stop using silver amalgam because of its mercury content. Neither could be reached for comment Wednesday because they were with patients, their offices said. However, the dentists said in recent interviews that they tell patients mercury leaks out of silver fillings, and make the option of replacement available to patients. Mallory and Minguske said they weren't advocating replacement to patients."

Enclosed with the last issue of the Bio-Probe Newsletter was a complimentary copy of the revised edition of our patient education booklet "The Hazards of Silver/Mercury Dental Fillings". It appears from my conversations with some of you that you were not aware you were receiving a new and revised edition. The new edition is 12 pages longer and has an introduction by Dr. Alfred V. Zamm. In addition, we have added information on Insurance and Informed Consent. The cover price has also been increased to $1.95. The revised edition is packed 70 copies to the box and the price is $50.00 per box, postage included.

Please respond to our request for the names and addresses of your patients who have had their amalgams replaced. We fully understand the confidentiality of the information. So please be assured that we will do nothing to violate the trust you place in us. From our standpoint, it doesn't matter whether the work was done on a preventive basis (no clinical symptomatology involved) or on a palliative basis with overt clinical symptoms present, we would like the names of all individuals who have had their amalgams replaced.