On 11 July 1994, BBC’s "Panorama" presented a 40 minute program on dental amalgam entitled "Poison In The Mouth". The program featured the findings and views of medical scientists recognized as authorities on mercury. The representatives of the British Dental Association were shown as admitting their lack of knowledge of the published findings of the scientists. At best, their response to the scientists was inadequate.

The program stirred considerable interest in the United Kingdom. Representatives of British dentistry complained to the press that the program was one-sided. A response from Panorama reporter Tom Mangold, printed in the London Times on 19 July 1994, countered that the "good news" on dental amalgam was not ignored; Panorama sought it out, but found that there was none. Mr. Mangold detailed the weakness, or rather absence, of scientific foundation for the position that mercury exposure from dental amalgam is harmless.

In an effort to achieve damage control, the Chief Executive of the British Dental Association (BDA) published a rebuttal to the Panorama program in the August 1994 edition of "BDA News". This article, along with response from Bio-Probe follows.

**SCIENCE UPDATE**

**FROM THE CHIEF EXECUTIVE'S PEN**

The Panorama Programme

Manifestly we did not come over well; and our discomfiture has only been reduced a little by subsequent press and radio coverage which has been far more balanced.

One of the most helpful articles appeared in The Times of July 14th in which Dr. Simon Wessely challenged the scare story on amalgam.

Although it was obviously not apparent, before the prerecorded interview we did delve very deeply into all the available literature and were prepared to deal with the research from Viny, Lorscheider, Drasch and others as well as questions that might have been posed on many other aspects on the use of amalgam. We had rehearsed the arguments and, of course, during the recording many of these points were made but were not selected for transmission. Specifically:

- **Echeverria**'s neurobehavioural work on USA dentists who have raised mercury urine levels as a result of poor mercury hygiene in their surgeries is potentially important. We were aware of it before the Panorama interview and indicated that we would actively need to review it when it is published.

- **Aposhian**'s work suggesting a link with Alzheimer's disease has still not been traced on Medline, or given to the BDA by Panorama. Aposhian has published research on mercury excretion levels and the relationship with the number and size of amalgams. Similarly a Medline search on Haley’s work shows eight papers since 1990 but none on amalgam hazards.
Bio-Probe Response:
It is apparent that the Chief Executive (who incidentally is the same John Hunt interviewed on the Panorama programme), nor his staff, reevaluated the Panorama programme prior to writing this parody. To start with, Professor Aposthian has not actively worked on any relationship between mercury and Alzheimer's disease. What he has done is study the efficacy of DMSA and DMPS in removing mercury from the body; and on the relationship of dental mercury to total mercury body burden. Dr. Aposthian's research has demonstrated that mercury from amalgam dental fillings has a direct relationship to total mercury body burden and the number and size of amalgam dental fillings. In fact, the findings showed that approximately two-thirds of the total mercury in the body of the subjects came from their amalgam dental fillings.

The Chief Executive then goes on to state that "Haley's work shows eight papers since 1990 but none on amalgam hazards." This is apparently an effort to leave an erroneous impression on the reader concerning the significance of Professor Haley's work. It is true that Professor Haley's studies were not on amalgam. His studies involved the role of heavy metals and the CSF and brain; the results of his studies did, however, demonstrate a probable involvement of mercury in physiological and biochemical disturbances in the CSF and brain. Although not aware of it at the time most of his research was being done, Professor Haley is now acutely aware of the fact that the source of most mercury in the brain is amalgam dental fillings.

Friberg has two publications since 1990 on Medline. One is a review article on biological monitoring, with no references to specific metals. The other is about primate exposure to methyl mercury, with no mention of amalgam. Friberg was quoted as a "WHO consultant." Like other researchers interviewed by Panorama their advice to WHO has not so far resulted in a WHO recommendation to member governments to cease use of amalgam. In 1991 Friberg prepared the first draft to Environmental Health Criteria for Inorganic Mercury, published by WHO jointly with the UN Environment Programme and the International Labour Organization. The distinguished international panel concluded 'recently, there has been an intense debate on the safety of dental amalgams and claims have been made that mercury from amalgam may cause severe health hazards. Reports describing different types of symptoms and signs and the results of the few epidemiological studies produced are inconclusive.'

Bio-Probe Response:
Professor Dr. Lars Friberg has, for more than 30 years, been considered by most scientists, toxicologists, and medical researchers to be one of the foremost experts in the world on mercury toxicology. I find it extremely interesting that the Chief Executive felt it important to go back in time when he was searching for pro-amalgam committee reports but felt compelled to limit his search of Professor Friberg's work to 1990 forward. Further, he makes no mention of the fact that Professor Friberg retired in 1991, as Chief of the Institute of Environmental Medicine and the Department of Environmental Hygiene of Sweden's Karolinska Institute, one of the most prestigious research facilities in the world. Had the Chief Executive been a little more liberal in his search for Professor Friberg's published studies I am sure he would have noted that in 1969, a distinguished international committee, of which Dr. Friberg was Chairman, published a major study defining the "Maximum allowable concentrations of mercury compounds (MAC Values), which, was one of the first definitive studies on exposure values for mercury vapor. In 1972 a classic textbook was published titled "Mercury in the Environment. An Epidemiological and Toxicological Appraisal" the editors of which were Friberg L. and Vostal I. In 1973, again as Chairman of the task group, a 42 page study was published "Accumulation of toxic metals with special reference to their absorption, excretion and biological half-time. Further, in 1986, Lars Friberg was the lead author on a major scientific paper demonstrating a direct correlation between the numbers and size of amalgam dental fillings and the degree of mercury contamination in the brain. Or, that Lars Friberg was the Chairman of Sweden's Expert Commission which spent 18 months investigating the toxicological effects of dental mercury and concluded: "From a toxicological standpoint amalgam is not a suitable dental material." Or, that the same WHO report Mr. Hunt so eloquently quotes in his behalf, also clearly demonstrated that dental mercury is the greatest source of mercury exposure to the general population, far exceeding the amount of mercury contamination of the human body attributable to fish consumption.

Vimy and Lorscheider's animal work suggesting risks from amalgam use in pregnancy is published and well known. We fully accepted that some mercury from existing restorations and from the placement of fillings during pregnancy does reach the foetus or child from blood and maternal milk.

However, studies of dental surgery assistants, women dentists and dentists' wives have failed to find any link between the incidence of spontaneous abortion or non-congenital abnormalities and mercury exposure in the dental environment.

This is an important area for research and further studies are needed. At present, however, there is no evidence of pregnancy problems in the population at most obvious risk.

Bio-Probe Response
Sweden and Germany have both issued advisories warning against the use of amalgam for women of child bearing age and to also restrict dental work during
pregnancy to the minimum considered absolutely essential. It is a real tragedy that the dental establishments in other countries have exerted great efforts to preclude such pronouncements from being made in their country. It is apparent the ADA and the BDA use the same flawed research as continued justification for their position. The studies being referred to in the middle paragraph above provide some very interesting data, when one looks below the surface and the headlines. For example, the intent of the original 1980 study by Cohen et al. was to evaluate the effect of "anesthetic gases" on female dental personnel. Seemingly as an afterthought, one question was included dealing with exposure to mercury. This question was apparently designed to yield the type of data being used by the dental establishment:

"Do you work in an office that places less than 40 amalgam fillings a week, or more than 40 amalgam fillings a week?" The high exposure and low exposure groups could easily have averaged 41 and 39 amalgams per week, hardly a valid comparison. The results of such a question were further skewed by including the thousands of women who work in specialty dental offices that do not do any restorative dental fillings.

Respondents were given a listing of symptoms and asked to indicate if they suffered any of the symptoms indicated. What the respondents weren’t told was that most of the symptoms caused by mercury were excluded from the list.

Perhaps the most interesting gambit in the study was to exclude the answers of female dentists from the final conclusions of the study. The reason given was insufficient response. At the time there were approximately 1900 female dentists in the United States and of that number over 1700 responded to the questionnaire survey. It would be extremely interesting to see what the incidence of spontaneous abortion or non-congenital abnormalities or infertility was in the female dentist population.

An interesting 1987 Polish study by Sikorski et al. might provide some clues. This study revealed a high frequency of adverse events of pregnancy among dental staff. Of 117 pregnancies in the mercury-exposed group, 28 pregnancies in 19 women led to reproductive failure, such as spontaneous abortion (19), stillbirth (3), and congenital malformations (5) cases of spina bifida and one case of intra-atrial defect. Moreover, other studies have clearly shown learning deficit disorders in children of mothers having been exposed to mercury.

With regard to infertility, a more recent 1994 study, published the results of an evaluation of female dental assistants demonstrating almost a 50% decrease in fertility.

- **Vimy and Lorscheider** have also suggested that amalgam impairs kidney function. A February 1993 review article by Jones (Journal of the Canadian Dental Association) suggested that the Vimy data actually showed improved kidney function, with changes in the eating patterns of the sheep accounting for the reduced filtration rate rather than mercury exposure. This information was given to Panorama in interview but not broadcast.

### Bio-Probe Response:

It is always fascinating how the damage control experts of the dental establishment handle peer reviewed research, published in prestigious medical journals, that cast any type of aspersion on the safety of dental amalgam. The immediate response is "We haven’t had time to review and analyze the entire study and the protocols used." The next response to this particular study was "Calgary Sheep Study Flawed." To support such a position the following types of remarks are included, i.e., the Calgary study utilized sheep as the test animal, which is not an appropriate model. Furthermore, the animals swallowed mercury during the placement of the amalgam fillings and the fillings were not placed properly, and contained more mercury than normal. Sheep chew constantly causing an exaggerated release of mercury, etc. Had the study itself been actually read, the answers to these criticisms would have been found.

The final aspect of damage control is to immediately find a credentialed "expert" who will go on the record to denigrate and call into question actual testing protocol that led to the conclusion of kidney damage. Once this is accomplished, then the select group of dental "hit men" (dentists who write for dental journals exclusively to support establishment positions, or who are affiliated with the National Council Against Health Fraud, or similar organizations) write articles that will be published in dental journals. These articles all have one thing in common, i.e. they selectively utilize secondary research to support their position, and never are able to offer any original primary research in opposition.

The problem with all of this rhetoric is that it is all wrong. What the establishment should be saying instead of indulging in character assassination and questioning the integrity of the peer adjudication system is: "We are very concerned about the findings of this study and we are immediately funding research to replicate the study to validate the results and conclusions of the authors."

- **Drasch's** study was examined by us prior to the interview. It involved autopsies on 108 children who died suddenly within the first five years of life and examination of 46 aborted foetuses.

The study claims to link mercury exposure to maternal amalgams.

However, the study has incomplete data on dietary and occupational mercury exposure of the mothers. Also, the levels were generally within or below the levels found in adults without amalgam fillings. Tom Mangold did not raise the Drasch study with us during the interview.
Bio-Probe Response:
It is beyond comprehension that the work of Dr. Drasch should be treated in the cavalier manner that it was. As the Chief Executive of the British Dental Association, it would appear absolutely mandatory that a report such as Dr. Drasch’s identifying dental mercury as a possible cause of unexplained infant deaths, would command immediate attention and serious discussion with the British Medical Association and the Department of Health. The minimum response of the establishment should have been no less than allocation of funds to responsible medical researchers to replicate Dr. Drasch’s work.

- Sweden’s forthcoming ban on amalgam use is still understood to be based on environmental arguments. This has previously been confirmed by the Swedish Dental Association and the Swedish Chief Dental Officer. Only on July 1st did we hear from the Swedish Ministry of the Environment and Natural Resources that “Amalgam is being phased out primarily for environmental reasons.”

A contrary view was put on the programme by a member of Sweden’s parliament rather than a spokesman for the government. If the ban results from evidence of health damage then it should operate immediately, of course.

Bio-Probe Response:
It is obvious from the Chief Executive’s remarks that contamination of the environment, within the United Kingdom, by dental mercury is certainly not a concern of the British Dental Association. Deep concern about mercury contamination might be ok for Sweden but it certainly has no place for consideration in the UK. If implanting one of the most poisonous substances into humans is perfectly safe, how could it endanger the environment?

Aside from environmental reasons, it is evident that someone in the Swedish Government must have had some concerns about the safety of amalgam dental fillings because the insurance reimbursement policy was changed to permit the dentist to place composite fillings instead of amalgam and compensate them for the extra time required to place composites. Further, in the Government’s pronouncement about phasing out amalgam, they stated that full amalgam replacement could be authorized and that the government would make a serious effort to provide adequate medical help for those individuals who had suffered from the effects of dental mercury.

- The Department of Health has recently told the BDA that: “The Committee on Toxicity advised in 1986 that the use of dental amalgam is free from the risks of systemic toxicity and that only a few cases of hypersensitivity occur.”

"The subsequent research findings, and recent evaluations by several authoritative national and international expert committees are consistent with that advice. The public can be reassured that the Department of Health will continue to monitor carefully all research in this area.” This, of course was not broadcast.

Nor was the fact that no other national dental association has yet suggested that amalgam be banned. In 1993 the US Public Health Service recommended no restrictions on the use of amalgam at the present time. Recent review articles in the journals of the Canadian and American Dental Associations have reinforced that view.

If there really is a scientifically proven problem with the use of amalgam we in the dental profession would, of all people, be the most concerned not only for our patients but for ourselves and our staff.

Contrary to the impression given by the Panorama programme we are certainly not complacent and health risks associated with dental treatment must be taken seriously. But we are not toxicologists and we have to rely on the experts in the field.

So far, they have not given the BDA reason to change course but we will be pressing for more research. We will suggest to the DoH that occupational health hazards of amalgam restorations be high on the list of their research priorities.

As I said in my letter of 1st July to members:

In April 1992 the Swedish Medical Research Council held a three day state of the art conference examining the potential biological consequences of mercury released from amalgam. The conclusions of the scientific panel were:

- No significant effects on the immune system have been demonstrated with the amount of mercury which may be released from dental amalgam fillings.

- Allergic reactions to mercury from amalgam fillings have been demonstrated, but are very rare.

- In a very small number of individuals, local reactions may occur adjacent to amalgam restorations.

- There are no data to support the belief that mercury released from dental amalgam give rise to teratological effects.

- Available data do not justify discontinuing the use of mercury containing dental amalgam fillings or recommending their replacement.

At subsequent meetings in Dusseldorf and Frankfurt in 1994 similar agreements were reached and reinforce the advice we and the Department of Health have been giving on this difficult subject.

I will ensure that members are kept informed on this important matter through the BDA News and the British Dental Journal.

Bio-Probe Response:

One thing the public desperately needs to know is that all the so called "official" dental establishment and government agency committee reports reaffirming the safety of amalgam, were all staffed by pro-amalgam advocates. Furthermore, when any scientific evidence is presented that differs from the predetermined conclusions of the committee, it is merely included in the official transcripts of the committee proceedings but never included in the conclusions. The conclusions are written for the media and not the scientific community.

Another point of significant note is that since 1984 every one of these committee reports has stated that more research has to be done. The fallacy of that statement of course is that research funds controlled by, or influenced by, the dental establishment are never allocated to fund research designed to actually determine the biocompatibility of dental amalgam or to determine the real incidence of allergic reactions to dental mercury. This policy has resulted in the dental establishment forfeiting its obligation to resolve the amalgam issue.

Resolving this conflict is now in the hands of medical scientists and researchers all over the world. The results of this medical research are inexorably leading to the conclusion that hundreds of millions of innocent people have been placed at risk solely to protect the handful of dental establishment "tenured" employees who are unable to admit their own failures. It is only through programmes like Panorama and 60 MINUTES that most dentists, who are really dedicated and honorable individuals, find out about the research that their dental associations don’t want them to know about. It is apparent that great sums of money will be spent by the dental establishment on damage control solely to perpetuate the status quo and attempt to offset the "truth" so eloquently presented by Panorama. As can be seen in this article, the damage control technique requires that any researcher, or research, presenting any doubts on the safety of amalgam, be cast in the worst possible light.

The Chief Executive may certainly have been right about the 1994 meetings in Dusseldorf and/or Frankfurt, Germany, which were no doubt gatherings of pro-amalgam advocates providing themselves another platform to confirm the safety of dental amalgam without putting forth any valid scientific research to support their conclusions. However, another meeting held on 29 April-1 May 1994 in Otzenhausen (near Trier), Germany is another matter. The usual pro-amalgam advocates were on the agenda for their usual presentations. However, also on the programme were some outstanding scientists and researchers presenting:

- Findings of their own research on the effects of dental mercury.
- Research clearly demonstrating the mechanisms for the release of mercury from amalgam dental fillings.
- Alternative materials and their acceptable use in lieu of implanting the poison mercury into unsuspecting patients.

The conclusions of this conference could certainly not be categorized as the Chief Executive would have you believe. For example, the Concluding Remarks of Conference Co-Chairman Professor Dr. Lars Friberg included:

"The evidence from experimental and human studies at higher exposure levels clearly indicate that mercury from the toxicological point of view is an unsuitable element to use in dentistry. It is my opinion that it is prudent to conclude that mercury from dental amalgam is not safe to use for everyone. If regulatory agencies and the dental profession will continue to advocate for the use of amalgam they should do this because they are willing to accept certain risks until more suitable filling materials are at hand and tested. It is nothing exceptional that certain risks are accepted. They should, however, not try to conserve the use of amalgam based on false conclusions that amalgam is safe to use."

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The United Kingdom Chapter of the International Academy of Oral Medicine (IAOMT) has received numerous inquiries from dentists and from the public. They are providing information packages to the public and have established a training program to certify dentists in the IAOMT Standards of Care for removal of amalgam fillings. These have been established to protect the patient, doctor and staff from excessive amounts of mercury during amalgam removal.

The Panorama program has subsequently been shown in parts of continental Europe and has been syndicated for viewing elsewhere in the world. In the United States, rights for the program are owned by "Lionhart" in New York City. To date, the program has not been picked up in the U.S.A. The most interest has come from "Frontline", produced for PBS by WGBH in Boston [(617) 492-2777; ask for "Frontline" office.]

The more interest Frontline receives, the better the chance that the program will be viewed in the U.S.A. There may also be interest from "60 Minutes" and/or NBC News. Please ask patients, friends, etc. to contact Frontline, at least, and encourage them to contract for the BBC Panorama program on dental amalgam. This can best be done by preparing xerox flyers for distribution.

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ABSTRACTS

Drasch, G; Schupp, I; Hofl, H; Reinke, R; Roider, G.
Mercury Burden of Human Fetal and Infant Tissues.

The total mercury concentrations in the liver (Hg-L), the kidney cortex (Hg-K) and the cerebral cortex (Hg-C) of 108 children aged 1 day-5 years, and the Hg-K and Hg-L of 46 fetuses were determined. As far as possible, the mothers were interviewed and their dental status was recorded. The results were compared to mercury concentrations in the tissues of adults from the same geographical area.
The Hg-K (n = 38) and Hg-L (n = 40) of fetuses and Hg-K (n = 35) and Hg-C (n = 35) of older infants (11-50 weeks of life) correlated significantly with the number of dental amalgam fillings of the mother. The toxicological relevance of the unexpected high Hg-K of older infants from mothers with higher numbers of dental amalgam fillings is discussed.

Conclusion: Future discussion on the pros and cons of dental amalgam should not be limited to adults or children with their own amalgam fillings, but also include fetal exposure. The unrestricted application of amalgam for dental restorations in women before and during the child-bearing age should be reconsidered.

**BIO-PROBE NOTE:** Professor Dr. Gustav Drasch is a forensic pathologist at the University of Munich in Germany. He had presented these findings at the IAOMT meeting in Otzenhausen, Germany on 29 April-1 May 1994 and was featured on the recent BBC Panorama program on dental amalgam.

This human study demonstrating transfer of mercury from the amalgam dental fillings of females to the tissues of their babies is supported by three previous animal studies [Vinmy, MJ et al. (1990): Maternal-fetal distribution of mercury (Hg203) released from dental amalgam fillings. Amer J Physiol. 258, 939-945; Takahashi, Y et al. (1992): Mercury content in tissues of pregnant rats with dental amalgam. J Dent Research. 71(4), 1094, A-67; and Takahashi, Y et al. (1992): Number of amalgam fillings in pregnant rats and mercury concentration in their fetuses. J Dent Research. 71(SI), 571, A-445.]

The scientific literature is replete with studies demonstrating harm from pre-natal exposure to mercury, at all levels investigated. This, along with the present human study supported by three animal studies is more than sufficient evidence for responsible governments to take immediate action to protect unborn babies from mercury exposure derived from the amalgam dental fillings of their mothers. It should also be noted that the authors of this human study stated: "Abortions had mainly been induced for medical reasons. All infants had died suddenly and most were diagnosed as sudden infant death syndrome."

Northern and quantitative immunoblot analysis showed high expression of CHIP28 (channel-forming integral membrane protein of 28 kDa) water channels in rat lung; immunocytochemistry showed CHIP28 localization to epithelial cell plasma membranes. Stopped-flow light scattering measurements of osmotic water permeability (Pf) in freshly isolated rat alveolar type II epithelial cells indicated a high Pf of 0.015 ± 0.002 cm/s (10 degrees C) that was weakly temperature-dependent (activation energy, 4 kcal/mol) and reversibly inhibited by 78 ±4% by 0.5 mM HgCl2.

An in situ-perfused sheep lung model was used to determine the route for water movement in intact lung. Blood-to-air-space water transport was measured by sampling air space fluid after instillation into distal air spaces of hyperosmolar saline (900 mOsm) containing radioiodinated albumin and [14C]mannitol. In seven sets of experiments, air space osmolality and radioiodinated albumin equilibrated with a t1/2 of 0.85 ± 0.1 min. In the contralateral lung perfused with 0.5 mM HgCl2, t1/2 increased to 2.7 ± 0.4 min; the inhibitory effect of HgCl2 was fully reversed by 5 mM 2-mercaptoethanol.

These results provide direct evidence for transcellular movement of water across the alveolar epithelium in intact lung through mercury-sensitive water channels.

**BIO-PROBE NOTE:** This study provides important new information on a potential adverse effect of continuous inhalation of mercury vapor from amalgam dental fillings. Published research has confirmed the continuous inhalation and the accumulation of amalgam mercury in lung tissue. A 78% (± 4%) mercury-induced reduction in the ability of lung alveolar epithelium to achieve the air space hydration necessary for respiration and reabsorption of excess alveolar fluid represents a potentially dramatic finding.

Toet, AE; van Dijk, A; Savelkoul, TJ; Meulenbelt, J.

Mercury Kinetics in a Case of Severe Mercuric Chloride Poisoning Treated with Dimercapto-1-propane sulphonate (DMPS).

Hum Exp Toxicol. (1994): 13(1), 11-16, Jan. A case of severe mercuric chloride poisoning with clinical signs of mucosal damage of the gastrointestinal tract and anuric renal failure, is presented. The initial whole blood mercury concentration was 14,300 micrograms l-1. This concentration is supposed to be associated with fatal outcome due to multiple organ failure.

Because of anuric renal failure, haemodialysis was necessary. Kidney function returned to normal within 10 days. Haemodialysis proved to be ineffective with regard to total mercury elimination. Treatment with DMPS was started because of very severe poisoning, anuric renal failure and optimistic reports on the "new" chelating agent 2,3-dimercapto-1-propanesulphonic acid (DMPS) in mercury poisoning. DMPS was
administered by parenteral route initially and was continued thereafter by oral route, until whole blood and urine mercury concentrations had decreased below a level considered as toxic.

Except for a temporary pruritic erythema of the skin, no side effects of DMPS treatment were observed. The clinical course was mild, despite continuing high whole blood mercury concentrations. Recovery was uneventful and complete.

DMPS treatment, administered by intravenous and oral route, was shown to be an effective alternative for BAL in life-threatening mercuric chloride intoxication. The pharmacokinetics data presented in this case report suggest that non-renal mercury clearance may considerably exceed renal mercury clearance.

Prajitno, M.
The Influence of Amalgam on Immune Response of Gum Tissues.
Bacteria in mouth saliva are able to change expelled mercury from amalgam into toxic methyl mercury that can react with SH component of protein, forming mercury protein. The author's assumption was that this mercury protein is an immunogen, capable to affect immune response of the gum tissues.

Observational cross-sectional analytic study was made on gum tissue slides prepared by using cut off gum tissues on 22 male, healthy patients, age 18-32 years while undergoing lower third molar operations, wearing 1-2 amalgam for less than 5 years. For control, gum tissue slides from healthy patients, neither of them wore dental amalgam nor had any dental caries.

Observations of the variables were made on slides from fresh and fixed tissues that stained in accordance with the variables to be observed. Slides made from fresh tissues were stained by monoclonal reagents of Becton Dickinson. The variables were active lymphocytes, lymphocytes, macrophages, basophils, eosinophils, neutrophils, T-4, T-8, Pan-T, active plasma cells, IgM, IgG, IgA in plasma cells, and reticulum fibres. Data analysis was done by using homogenizing test, reliability test, normality test, discriminant analysis, MANOVA (p), clustering, and ANOVA (p).

Results: There is evidence of the influence of amalgam filling on immune response of gum tissues and that mercury-protein is indeed an immunogen.

BIO-PROBE NOTE: It has been very well documented that the oxidized ion of any form of mercury, including elemental and inorganic mercury, reacts with the SH component of proteins, forming mercury-protein. Conversion to methyl mercury is not necessary to form the mercury-protein immunogen.

Denden, JM; Visser, H; Ewald, B; Kruger, W.
In Vitro Cytotoxicity of Gallium Alloy GF.
Gallium based dental filling materials are supposed to be an interesting alternative to dental amalgam. We compared the in vitro cytotoxicity of Gallium Alloy GF (Tokuriki Honten Co., Ltd.), a non-gamma-2-amalgam (Amalcap Plus, Vivadent), and a precious casting gold alloy (Degulon M, Degussa). In each case ten cylindrical specimen (r=2 mm, h=4 mm) of different ages (up to one year old) were incubated in 20 ml supplemented DMEM (Gibco) with 10% FCS and Penicillin-Streptomycin for 7 days at 37 degrees C. The extracts were filtrated (Millipore) and dilutions of the filtrates were applied into 96 well tissue culture plates (Nunc) with nonconfluent adherent human epithelia cells (Hep-2, Gibco) and mouse fibroblasts (L-929, ECACC). After 72 hours the medium was removed. The cell proliferation was assessed by measuring the cellular protein using the Lowry-test. The viability was measured by the MTT-test. In addition the agar overlay method was carried out with the same cell types in petri dishes. The specimen were placed on the surface of the agar and incubated for 48 hours.

Extracts of the Gallium Alloy showed white fluffy protein precipitates while the extracts of the other test materials remained clear. The specimen of Gallium Alloy which were used in medium showed coverings; even extracts with PBS appeared dull. In comparison to dental amalgam and precious casting alloy the proliferation and viability of the cells were markedly depressed by the extracts from Gallium Alloy. The agar exhibited an asymmetric opaque zone around the specimen from Gallium Alloy. After 24 hours the pH indicator neutral red changed the color from salmon-colored to yellow (acidic) on the one and to livid blue (alkaline) on the other side of the specimen. Around the Gallium Alloy the area with non viable cells was much larger than those of the controls.

Our results are in contradiction to some recent findings of other authors and suggest that the Gallium Alloy GF is not as biocompatible as the other dental materials tested.

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FORUM

IAOMT 10TH ANNIVERSARY MEETING
San Diego, California.
Chairman/Meeting reservations: David C. Kennedy, D.D.S. 2425 3rd Avenue. San Diego, CA. 92101. Phone: (619) 231-1624.
Registration: IAOMT Members = $285.00; Non-Members = $395.00 [IAOMT membership = $200.00 initial, $175.00 renewal.] Tenth Anniversary Banquet Dinner - Saturday, 24 September - $50.00 per person (RSVP).
Hotel: Double Tree Horton Plaza; Phone (619) 239-2200 or (619) 239-0509 for room reservations. Rate = $99.00/night (single or double). Airport shuttle = $4.00.

Program:
- H.V. Aposhian, Ph.D. (Professor of Molecular and Cell Biology, U of Arizona): Chelating Agents: Part I.
- Peter Duesberg, Ph.D. (Professor of Molecular and Cell Biology, UC Berkeley): The Drug-AIDS Connection.
- Gaston Naessens, Biologist Diplome de L’Union Scientifique National Francaise/Dr. Jacinte Levesque: Somatidian Orthobiology.

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IAOMT - UNITED KINGDOM

"THE TOXIC EFFECTS OF MERCURY IN THE BODY"

Date: 19-20 November 1994

Site: The Excelsior Hotel - Heathrow Airport. Special IAOMT rates. Tel: (81) 759-6611.

Registration: 250.00 [British pounds]. To: IAOMT (Dr. Anthony C. Newbury). 72 Harley St., London, W1N 1AE, United Kingdom. Tel: (71) 580-3168. FAX: (71) 436-0959.

Speakers: Murray J. Vimy, D.M.D.; Anne O. Summers, Ph.D.; Boyd E. Haley, Ph.D.; James V. Masi, Ph.D.; Prof. Dr. Gustav Drasch; Dr. J. Hartz; Dr. E. Lynch; Dr. S. Davies; Dr. A. Hibberd; Dr. D. Phillips; Mr. F. Taylor; Mr. S. Hewitt; Dr. Deane.

Considerations, medico-legal aspects, and fluoride research and effects.

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BRITISH HOMEOPATHIC DENTAL ASSOCIATION

2nd ANNUAL SYMPOSIUM - "DENTAL HOMEOPATHY - U.S.A. AN AMERICAN APPROACH.

Speaker: Richard D. Fischer, DDS, FIAOMT, FAGD. Topics include first aid dental remedies, case presentations on TMJ and periodontal disease, and homeopathic view of mercury and fluoride.

Date: Saturday, 8 October, 1994; 0900-1715 hours.

Site: The British Dental Association. 64 Wimpole St. London, W1, UK.

Registration: Members= 70.00, non-members= 100.00 (British pounds). To: Secretary, BHDA, 12 Wellington Rd., Watford, Hertfordshire, WD1 1QU, UK. Tel: 0923 233336.

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AMERICAN ACADEMY OF BIOLOGICAL DENTISTRY

"DENTISTRY, LIFE AND DEATH": BIOLOGICAL DENTISTRY.

Date: 18-20 November 1994.

Site: Paradise Village Beach Resort & Spa. Paseo De Los Cocoteros 001, Nuevo Vallarta, Nayarit, Mexico. Tel: (800) 995-5714 or (714) 348-8440.

Speakers: R. Andrew Landerman, DDS; Olle Redhe, DDS; Vera Stejskal, PhD; Vincent Speckhart, MD; Russell Jaffee, MD, PhD; Jack Alpan, DDS; Hector, Solorzano, MD; F. Tim Guilford, MD; Gary Strong, DDS; Lee Cowden, MD; Charlie Farr, MD, PhD.

Registration: $590.00; $250.00 for auxiliary with doctor (Add $50.00/person after 10/1/94. American Academy of Biological Dentistry. P. O. Box 856, Carmel Valley, CA, 93924. Tel: (408) 659-5385. FAX: (408) 659-2417.

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17th National Dental Seminar in Homeopathy


The Oakbrooks Hills Hotel and Conference Center, 3500 Midwest Rd., Oak Brook, IL 60522-7010. 800-455-3315. Basic and Advanced course will be offered by Craig A. Zunka, D.D.S., Dennis G. Chamesky, D.D.S. and Harris M. Kimbrough Jr., D.D.S. For additional information write to National Dental Seminar, P.O. Box 123, Marengo, IL 60152.