MEDICAL SCIENTISTS ADDRESS AMALGAM MERCURY!

A "Symposium on Neurotoxicity of Metals" was held in Tuscon, Arizona during the week of 18-22 October 1993. The symposium was for the 5th North American Meeting of the International Society for the Study of Xenobiotics and was attended by approximately 600 active scientists and principal investigators from universities and the pharmaceutical industry. A number of those in attendance presented at the symposium. A number of those in attendance represented the famed National Academy of Sciences (NAS). There were also numerous representatives from the Food and Drug Administration (FDA) and the National Institute for Environmental Health Services (NIEHS).

The symposium featured four major presentations and included approximately 300 poster session papers addressing metal toxicology. One of the four major presentations addressed dental amalgam mercury. It was sponsored by the National Academy of Sciences and presented by Fritz Lorscheider, Ph.D. of the University of Calgary Faculty of Medicine. The symposium abstract of this presentation is provided below.

The other three papers dealt with the involvement of manganese in Parkinson's Disease, the involvement of lead in learning deficit disorders, and the design and use of novel chelation agents to remove ionic metals from the body.

Clearly, the issue of heavy metal toxicology has come of age and is recognized as a serious issue in medicine by the prestigious National Academy of Sciences, as well as the scientific divisions of several government agencies. The general consensus at the meeting was that mercury exposure from amalgam dental fillings is a definite cause for medical concern and that as much as 90% of the body burden of mercury is derived from dental amalgam fillings.

The information presented in the following abstract is clear indication of adverse health effects resulting from exposure to mercury from amalgam dental fillings. Further, it is important to note that the findings are from well qualified medical scientists and are being published in respected, peer-reviewed medical journals.

The growing chasm between the findings of the medical scientists and the anecdotal position of organized dentistry is becoming increasingly evident. Committee 'opinion' reports claiming that dental amalgam is harmless because it has been used for over 150 years have an increasingly hollow meaning.

Table of Contents

Medical Scientists Address Amalgam Mercury! ..............................................1
The dental amalgam mercury controversy - mercury vapor and the CNS: Genetic linkage of mercury and antibiotic resistances in intestinal bacteria. Lorscheider et al. ......................................................2
Don't use amalgam for first tooth filling. Loe ...........................................2
Seattle, Washington to require dental office amalgam separators. ..............................5
ABSTRACTS:
HgEDTA complex inhibits GTP interactions with the E-site of brain beta-tubulin. Duhr et al ..........................................................5
Oral mucosal mercury concentrations in patients with amalgam fillings. Wittershausen-Zoëchlin et al .........................................................6
The prevalence and relationship of oral lichenoid reactions to food-stuff and amalgam. Nachtegal et al .........................................................6
Oral cancer development in oral lichen planus. Scully et al ..................................7
FORUM:
Explosive news story from Canada ...............................................................7
IAOMT Education/Fellowship Program .......................................................8
IAOMT Winter Regional Board Meeting ......................................................8
IAOMT Midwinter meeting on Biocompatible Dentistry..................................8
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THE DENTAL AMALGAM MERCURY CONTROVERSY - MERCURY VAPOR AND THE CNS; GENETIC LINKAGE OF MERCURY AND ANTIBIOTIC RESISTANCES IN INTESTINAL BACTERIA.
Lorschieder, FL (1); Vinyl, MJ (2); Summers, AO (3); Zwiens, H (1).
[(1) Dept. of Medical Physiology and (2) Dept. of Medicine, University of Calgary Faculty of Medicine, Calgary, Alberta, T2N 4N1, Canada. (3) Dept. of Microbiology, University of Georgia, Athens, GA, 30602, USA.]
[Invited paper sponsored by the National Academy of Sciences (USA) for the Symposium on Neurotoxicity of Metals, presented at the 5th North American Meeting of the International Society for the Study of Xenobiotics, Tuscon, AZ, 19 Oct 1993.]

ABSTRACT: The use of mercury (Hg), a volatile toxic heavy metal, in tooth filling materials has been controversial since its inception 160 years ago. At the present time, dental amalgam contains approximately 50% Hg and is used in at least 80% of all tooth restorations. Over the past 10 years, numerous reports have substantiated that amalgam Hg vapor is continuously released into mouth air and that this form of Hg exposure is greater than all other environmental sources combined for the general population. Absorption and body tissue concentration of amalgam Hg in the monkey is significant. Two important regions of amalgam Hg accumulation are the brain and the intestinal tract (Goering et al. Fundam. Appl. Toxicol. 19:319-329, 1992). Several laboratories have now focused on the effects of amalgam Hg upon cell function of these two organ systems.

Recently, other laboratories have implicated Hg, selectively concentrated in human brain regions involved with memory function, in the etiology of Alzheimer’s disease (AD). Abnormal microtubule formation in AD brains has been associated with a defect in tubulin depolymerization, which increases the density of neurofibrillary tangles. A similar tubulin defect can be induced in brain of Hg-treated rats, suggesting a connection between exposure to inorganic Hg and AD (literature reviewed by Goering et al. ibid). Since the brain neuronal phosphoprotein B-50 (Coggins et al. J. Neurochem. 60:368-371, 1993) and brain microtubule protein (Sicaffe et al. Biochem. 31:310-316, 1992) are both substrates for ADP-ribozymyltransferase, current collaboration in our laboratories involves the measurement of ADP-ribosylation of rat brain neuronal and microtubule proteins (B-50 and tubulin) by quantification of 32P-labelled proteins on 2-D gel following in vitro and in vivo exposure to inorganic Hg (both Hg2+ and Hg0). The results of this study indicate that inorganic mercury markedly inhibits ribosylation metabolism of both tubulin and actin in vivo in rat brain at mercury concentration levels which are identical to amalgam mercury levels previously reported in monkey brain.

Intestinal bacteria can acquire genetic resistance to the toxic effects of Hg, and human bacteria with this Hg resistance are significantly more likely also to be resistant to antibiotics. In monkeys, a large proportion of their oral and intestinal bacteria (eg. oral streptococci, enterococci, enterobacteriaceae) became resistant to Hg within two weeks following installation of amalgam tooth fillings. Nearly all of these Hg-resistant bacterial strains also became resistant to one or more commonly used antibiotics (eg. ampicillin, tetracycline, streptomycin, kanamycin, erythromycin, chloramphenicol). The proportion of Hg and antibiotic resistant bacteria markedly declined during the two months after amalgam removal. It is concluded that dental amalgam Hg can selectively increase the prevalence of plasmid-associated Hg and antibiotic resistances in oral and intestinal bacteria (Summers et al. Antimicrob. Agents Chemother. 37:825-834, 1993). Our laboratories are currently examining explicitly the effect of amalgam Hg upon the oral and intestinal microbiota of humans.

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DON'T USE AMALGAM FOR FIRST TOOTH FILLING!
SAYS

DR. HAROLD LÖE - DIRECTOR, NATIONAL INSTITUTE OF DENTAL RESEARCH.

A new era in dentistry has been initiated; the nation’s top dental authority has publicly declared that mercury/silver amalgam should not be used as the first filling in a tooth!

Dr. Harold L öe, the Director of the National Institute of Dental Research (NIDR) stated in the September, 1993 edition of "Dental Products Report":

"That first filling is a critical step in the life of a tooth. Using amalgam for the first filling requires
removing a lot of the tooth substance, not only diseased tooth substance but healthy tooth substance as well. So, in making the undercut you sacrifice a lot, and this results in a weakened tooth. The next thing you know the tooth breaks off, and you need a crown. Then you need to repair the crown...and so it continues to the stage where there is no more to repair and you pull the tooth. With the first filling you should do something that can either restore the tooth or retain more healthy tooth substance. Use new materials-composites or materials you can bond to the surface without undercuts. You can do this with little removal of the tooth substance so that the core of the tooth is still there."  

Interestingly, Dr. Loe also stated: "In the past we have treated caries as a lesion, or as a symptom of disease rather than the disease itself. Caries are actually an infectious disease caused by specific bacteria, and we know who they are! We need to give the patient a different message and tell the patient, the treatment of the cavity is nothing more than restoring the tooth, but the disease continues if we cannot control the microorganisms."  

Dr. Loe continues with: "Diagnostics have a much more prominent place in modern dentistry than they had in the past" and discusses the importance of addressing caries through dietary control and oral hygiene.  

This position paper by the Director of NIDR is of the utmost importance; indeed, it is revolutionary. The NIDR is the dental division of the National Institutes of Health (NIH) and, as such, is the foremost dental authority in the nation. (The American Dental Association is a voluntary trade organization with no legal authority to regulate anything in dentistry.)  

This new NIDR position signals a dramatic departure from "dentistry as usual" in the United States, as well as a new interpretation of "standard of care" for dental practice. Firstly, Dr. Loe declares that dentists should address the pathology of dental caries, rather than functioning only as "tooth carpenters" to repair the damage. It remains to be seen if this philosophy will receive its natural extension to the treatment of periodontal disease.  

It may be that dentists of the future will truly become "doctors", a status to which they have so long ascribed but have failed to fulfil (what responsible "doctor" would routinely implant a severely toxic material like mercury into their patients without knowing the most basic information about the material's toxicology or pathophysiology?).  

Secondly, Dr. Loe's position that amalgam should not be used as the first tooth filling is nothing less than revolutionary! After all, this is the dental filling material that has been used "safely and effectively for over 150 years" and is still the most widely utilized material in restorative dental practice. All of a sudden it is damaging to the tooth structure and should not be used as the initial filling! Many courageous dentists have been saying this for years, but this now comes from the Director of the NIDR!  

The fact that dental amalgam severely weakens the tooth while bonded composite dramatically strengthens remaining tooth structure is well documented in the dental literature. As early as 1956 dental researchers have been publishing results of studies demonstrating the weakening of tooth structure related directly to the extension of the prepared cavity [Vale, WA. Cavity Preparation. Irish Dent Rev. 2:33-41. 1956].  

Larsen and associates found that in all instances, teeth with cavity preparations were substantially weaker than sound teeth, and the width of the occlusal cavity influenced the strength of the natural crown [Larsen, TD et al. Effect of Prepared Cavities on the Strength of Teeth. Oper Dent. 6:2-5. 1981].  


Setting aside any consideration of potential toxic effects of exposure to dental amalgam mercury, there is absolutely no question that bonded composite is superior to amalgam and is the material of choice for the protection and preservation of human tooth structure.

The fracture and loss of large portions of tooth structure due to weakening from dental amalgam has been an extremely common occurrence that is familiar to every practicing dentist. These teeth are then subject to the removal of additional sound tooth structure to accommodate a full coverage crown (cap). Many, if not most of these teeth are also subject to eventual endodontic (root canal) therapy.

The health and financial implications of this widely ignored disadvantage of dental amalgam are enormous. Composite restorations are more expensive than amalgam fillings, but not by much (approximately 1.5 times the amalgam cost, or 50% higher). Even if amalgams were to last twice as long as properly placed bonded composites, the cost of the composites would be only three times that of amalgam. (There is no valid documentation comparing amalgam to modern, advanced composites that establishes that amalgams last twice as long as composites; the spread is only a few years, if that.)

On the other hand, full coverage crowns cost considerably more than amalgams or bonded composites (approximately 5-10 times as much, depending on the size of the filling), to say nothing of the loss of additional sound tooth structure and the cost of the increased need for endodontic (root canal) therapy. Root canals, like crowns and bridges (to replace lost teeth) are very expensive.

This brings us to the information on cost effectiveness of dental restoratives presented by the January 1993 Public Health Service’s (PHS) Committee to Coordinate Environmental Health and Related Programs (CCEHRP).

The CCEHRP conclusion (page x) was: "It is also recognized that a total conversion from dental amalgam to alternative materials would cause a significant increase in U.S. health care costs." The information leading to this conclusion is contained in Appendix I, interestingly entitled "The Benefits of Dental Amalgam" on pages I-42 to I-52 (there is no chapter entitled "The Benefits of Dental Bonded Composites").

Discussion on these pages compares lifetime costs of amalgam and composite, including three charts of different 60-year "models". It is concluded that the "anticipated longevity" of amalgam is 8-10 years and that of composite is 4-7 years. Based on this, the Committee concludes an approximate 2.5-fold increase in cost for composite over amalgam in 60 years (Model A). Model B, based on a 15 year longevity for amalgam and 10 years for composites, calculates to a 2 to 1 cost of composite over amalgam.

The third Model reflects the "countdown" theory that restored teeth will eventually lose more and more tooth structure and will eventually need crowns and/or root canal therapy. This Model (Figure 3, page I-51) shows the cost of composite + endo and + casting to be 6 times that of amalgam, replaced three times with amalgam over 60 years. This model apparently assumes that amalgam-filled teeth never need crowns or root canal treatments, even though that position is directly contrary to the available documentation, as well as clinical experience. Indeed, the Committee’s own report (page I-10) states that 12% of all amalgam replacements are for tooth fracture and that 58% of amalgams are replaced for recurrent decay, compared to 20% of composites replaced due to recurrent decay.

Moreover, the subcommittee totally ignored information provided by the Health Insurance Department of the government of Sweden. They had evaluated a group of citizens before and after removal of amalgam fillings and found a 30% reduction of lost work days due to illness two years after amalgam removal. This factor could account for large financial savings in terms of productivity, to say nothing of the reduction of health care costs.

How and why did the CCEHRP Committee arrive at their conclusion on the cost effectiveness of amalgam compared to composite, when their conclusion was actually contradicted by the information presented in their own report? The chapter, as stated, was "Prepared by the Ad Hoc Subcommittee on the Benefits of Dental Amalgam: Committee to Coordinate Environmental Health and Related Programs".
"Ad Hoc" is defined as an adjective as: "Concerned with a particular end or purpose"; or as an adverb as: "For the particular end or case at hand without consideration of wider application". An Ad Hoc Committee is usually not an official formation, but rather advisory.

A review of the names listed on page I-72 as members or consultants of the Ad Hoc Sub-committee on the Benefits of Dental Amalgam reveals that a great number of them have previously gone on record, in print, or by publicly stating their support for the continued use of amalgam. Qualifications that would appear to be biased towards achieving a "particular end or purpose." Their performance and evaluation of the subject would so indicate. Unfortunately, their conclusion was accepted, without contest, as the conclusion of the PHS CCEHRP Committee and promulgated as government policy - a matter of great shame!

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SEATTLE, WASHINGTON TO REQUIRE DENTAL OFFICE AMALGAM SEPARATORS!

The government of Sweden has declared that the use of dental amalgam will be phased out; the Swedish medical board says that it is due to environmental concerns over dental amalgam mercury. Several locales in the United States have investigated, and voiced concerns over, the contribution of dental amalgam mercury to environmental pollution. One of these locales is the metropolitan area of Seattle, Washington.

The Washington State Department of Ecology (WDOE) was delegated authority for the regulation of hazardous waste by the USEPA. The WDOE has published regulations (WAC 173-303) which define what a "dangerous waste" is and how it must be managed. These regulations prohibit the treatment and discharge of dangerous waste without the appropriate permits or approval.

The Seattle "Metro" jurisdiction includes most of King County and part of Snohomish County. It has a mercury discharge limitation of 0.2 milligrams/liter. Metro analyzed dental amalgam wastewater and has determined that it is a "dangerous waste" as defined by WDOE. Metro has stated: "Dentists are generating amalgam wastewater during operative procedures which exceeds Metro sewer discharge limitations." Metro tested three different wastewater amalgam treatment systems and determined that approximately 99% of the amalgam could be removed from dental office wastewater.

Dental office amalgam wastewater is now considered to be regulated waste by the Washington State Industrial Safety and Health Administration (WISHA). Metro is developing best management practices and a regulatory procedure to ensure that dentists remove mercury from their wastewater. The plan is expected to be finalized by December 1993.

Four European nations already require all dental offices to have wastewater amalgam separators. The first locale in the United States to do so is forthcoming; other areas are certain to follow suit. Once again the dental profession has ignored a serious concern to the point that government agencies are forced to step in and take action. Had this issue been addressed in a responsible manner by the dental profession, the burden on the practicing dentist would certainly have been mitigated.

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ABSTRACTS

HgEDTA COMPLEX INHIBITS GTP INTERACTIONS WITH THE E-SITE OF BRAIN β-TUBULIN

Duhr, EF; Pendergrass, JC; Slevin, JT; Haley, BE.

ABSTRACT: We have found that EDTA and EGTA complexes of Hg²⁺, which conventional wisdom has assumed are biologically inert, are potentially injurious to the neuronal cytoskeleton. Tubulin, a major protein component of the neuronal cytoskeleton, is the target of multiple toxicants, including many heavy metal ions. Among the mercurials, inorganic mercuric ion (Hg²⁺) is one of the most potent inhibitors of microtubule polymerization both in vivo and in vitro. In contrast to other heavy metals, the capacity of Hg²⁺ to inhibit microtubule polymerization or disrupt formed microtubules cannot be prevented by the addition of EDTA and EGTA, both of which bind Hg²⁺ with very high affinity. To the contrary, the addition of these two chelating agents potentiates Hg²⁺ inhibition of tubulin polymerization.

Results herein show that HgEDTA and HgEGTA inhibit tubulin polymerization by disrupting the interaction of GTP with the E-site of brain beta-tubulin, an obligatory step in the
HgEGTA, but not free Hg\(^{2+}\), prevented binding of \[^{32}\text{P}]\text{GTP},\) a photoaffinity nucleotide analog of GTP, to the E-site and displaced bound \[^{32}\text{P}]\text{GTP}\) at low micromolar concentrations. This complete inhibition of photoinsertion into the E-site occurred in a concentration- and time-dependent fashion and was specific for Hg\(^{2+}\) complexes of EDTA and EGTA, among the chelating agents tested.

Given the ubiquity of Hg\(^{2+}\) in the environment and the widespread use of EDTA in foodstuffs and medicine, these mercury complexes may pose a potentially serious threat to human health and play a role in diseases of the neuronal cytoskeleton.  

**NOTE:** EDTA is the chemical abbreviation of disodium ethylenediaminetetraacetic acid. EGTA is the chemical abbreviation for ethylene glycol bis (beta-aminoethyl ether) \(N, N', N''\)-tetraacetic acid. and GTP is the chemical abbreviation for guanosine triphosphate.

**BIO-PROBE COMMENT:** This study adds further documentation to the mounting evidence of the involvement of inorganic mercury in serious pathology of the central nervous system. The authors pointed out that inorganic mercury (ion) effectively disrupts brain microtubules reconstituted in vitro and that it has been shown to be more cytotoxic to cultured mouse glioma cells than either methyl mercury or other known neurotoxic heavy metals such as cadmium, copper, or chromium. The authors also cited two other published studies demonstrating that EDTA and EGTA potentiate the ability of inorganic mercury to inhibit tubulin polymerization or to promote microtubule depolymerization.

This information is particularly disturbing in view of the widespread exposure of humans to inorganic mercury ions (derived from the oxidation of mercury vapor in the body) from amalgam dental fillings and the equally widespread exposure to the EDTA and EGTA used in foodstuffs.

Further, the use of EDTA chelation for the treatment and prevention of cardiovascular disease is becoming increasingly popular. The results derived from this modality have been very rewarding, confusing the evaluation of the relationship to this published research. Their could be some mitigating factor involved, such as the form of EDTA used in the chelation or the accompanying materials utilized. However, it is incumbent upon the advocates of EDTA chelation to thoroughly investigate this issue.

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**ORAL MUCOSAL MERCURY CONCENTRATIONS IN PATIENTS WITH AMALGAM FILLINGS**

Willershausen-Zonnchen B. et al.  
**ABSTRACT:** Mercury concentrations were measured in specimens of oral mucosa taken during oral surgery from 90 patients (53 men, 37 women, mean age 42 ± 16 years); 30 of the patients had no amalgam fillings. All the mucosal specimens extended for at least 2-3 mm from the epithelium of the gingival margin and were clinically and radiologically normal. Thirteen patients without metallic fillings of any kind had mercury concentrations of 118.4 ± 83.7 ng/g tissue, and in 17 patients with precious metal fillings but no amalgam the mean mercury concentrations were 144 ± 290 ng/g tissue. Seventeen patients with 1-3 amalgam fillings had an average of 1975 ± 4300 ng/g tissue and in 26 patients with 3-6 amalgam fillings the average concentration was 1158 ± 2500 ng/g tissue. In 17 patients with more than six amalgam fillings the mean mercury concentration was 2302 ± 5600 ng/g tissue. Although these results demonstrate a considerable degree of transfer of mercury from the amalgam fillings to the oral mucosa, it had not resulted in any clinically detectable mucosal lesions.

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**THE PREVALENCE AND RELATIONSHIP OF ORAL LICHENOID REACTIONS TO FOOD-STUFF AND AMALGAM.**

Macleod R.I. et al  
**ABSTRACT:** Fifty patients with oral lichenoid reactions were patch tested to a standard and mouth battery including ammoniated mercury. Forty-one patients with other oral mucosal conditions were also tested.

Seven out of the fifty with oral lichen planus also had cutaneous involvement and none of these reacted to mercury. Seventeen of the patients with oral lichenoid reactions alone had positive reactions to ammoniated mercury. One patient with gold restorations tested positive to gold sodium
thiosulfate and gold chloride. There were thirty-eight positive reactions to nineteen other substances in the patients with oral lichenoid reactions but these did not appear relevant. Only one of the forty-one patients with other problems reacted to ammoniated mercury. Two of the seventeen ammoniated mercury positive patients were asymptomatic and in one of the lichenoid reaction was not adjacent to an amalgam. In all other mercury positive patients lichenoid reactions occurred adjacent to amalgam filled teeth. Amalgams were replaced in eleven of the remaining fourteen; nine of these improved, one did not and the outcome is awaited in the other.

These findings suggest that 40% of patients with oral lichenoid reactions alone will have allergy to mercury component of their amalgams and that replacement of these results in resolution of symptoms in the majority of cases.

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ORAL CANCER DEVELOPMENT IN ORAL LICHEN PLANUS.
Sully C. et al.

ABSTRACT: The concept that oral lichen planus (LP) may sometimes undergo malignant transformation is not new (Hallopeau H. Bull Soc Fr Dermatol Syphigr; 17: 33: 1910). Over subsequent years, sporadic case reports and some retrospective studies have suggested an association but despite some showing a small risk of malignant change, controversy still rages (Oral Surg 73: 699-706, 1992).

We have therefore examined 241 British patients with histologically confirmed oral lichen planus seen during 1982-1992 for evidence of development of carcinoma. Nine patients (3.7%) were known to have developed carcinoma in situ or well differentiated invasive carcinoma in an area of LP during that period. At presentation all carcinomas were in patients with atrophic and/or erosive LP, though in 4 there were preceding plaque-like lesions, 6 were in patients older that 65 years and in 6 the tumors were on the tongue.

The results support a small but clinically important malignant potential for LP particularly in lingual plaque-like or atrophic/erosive lesions and since LP is more common in the general population than leukoplakia (Salonen L. et al. J Oral Pathol Med. 19; 170-176, 1990), overall LP may be one of the most important potentially malignant oral lesions.

BIO-PROBE COMMENT: It would appear obvious from the above three abstracts that mercury from amalgam dental fillings is not the innocuous inert substance that the "establishment" would have us all believe. The first abstract shows the accumulation of mercury in the oral mucosa related to the presence of amalgam dental fillings; the second abstract shows that 40% of the patients with oral lichenoid reactions will have an allergy to the mercury component of amalgam dental fillings and that 80% of the individuals improved when they had their amalgam dental fillings replaced; the third abstract did not address mercury or amalgam, however, it is not a great leap of scientific logic to assume that amalgam dental fillings and the mercury escaping from them, causing allergic and other pathological reactions, is not an etiological factor in the progression of oral LP to carcinoma.

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FORUM

EXPLOSIVE NEWS STORY FROM CANADA!

The November 1993 issue of the "Saturday Night" newspaper supplement contained a comprehensive feature story about the amalgam issue. Saturday Night is a Supplement to most of the major newspapers in Canada and is received by approximately 85% of the citizens of Canada.

The article presented the findings of medical scientists that cast doubt on the safety of dental amalgam, the position of various segments of the dental profession, both pro and con, and some patient experiences with amalgam removal.

While stopping short of openly declaring dental amalgam to be a health hazard for everyone, the article clearly chastises the dental establishment for its unjustifiable support for amalgam safety. For example, one "authority" is quoted as declaring the University of Calgary research to be flawed and invalid while admitting that he had never read it!

This article is certain to generate considerable public interest in the controversy over the safety of dental amalgam, and an equally considerable degree of consternation in the dental establishment of Canada (See enclosed).

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IAOMT EDUCATION/FELLOWSHIP PROGRAM

A previous article of this newsletter addresses one of the numerous current indicators of the changing concept of modern dental practice. Before long, dentistry will be focused on disease and disease control, rather than on continuation of the emphasis on reporative procedures. Dental practitioners will be tiered on distinct levels, dependent upon their training and qualifications.

With this progression in mind, the International Academy of Oral Medicine and Toxicology (IAOMT) has instituted an educational program designed to prepare its membership for appropriate roles in modern dental practice.

Courses and lectures in various disciplines will be presented at the IAOMT Annual Meeting, the two yearly Regional Board Meetings, and additional meetings as deemed appropriate. Credit hours awarded for attendance at certified courses apply towards IAOMT Fellowship and Mastership. The following two programs for early 1994 have been prepared:

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IAOMT WINTER REGIONAL BOARD MEETING.


Tuscon, Arizona.

Hotel Reservations: Viscount Suite Hotel, 4855 E. Broadway, Tuscon, AZ 85711. Phone: (602) 745-6500. Fax: (602) 790-5114. Room Rate: $95.00 single/double.

Program: Saturday, 29 January 1994. 8:30 am - 5:00 pm.

» Murray J. Vimy, D.M.D. = "Current Medical Research on Dental Amalgam".

» Ed Arana, D.D.S. = "Mercury Detoxification".

» Jerry Senf, Ph.D. = "Brain Mapping/Diagnosis of Brain Function".

» Donald Armstrong (Superintendent, Pima County Wastewater Management) = "Dental Office Effluent and its Management".

» Gary, Strong, D.D.S. = "Free Radical Pathology".

» Phillip Sukel, D.D.S. = "Informed Consent".

» Michael F. Ziff, D.D.S. = "Mercury 101".

Board Meeting: Sunday, 30 January 1994. 8:00 - 12:00 noon.

Registration: IAOMT members= $95.00. Non-members= $175.00.

Contact: IAOMT. P.O. Box 608531, Orlando, FL 32860-8531. Phone/FAX: (407) 298-2450.

Supplementary IAOMT sponsored seminar:
Friday, 28 January 1994. 1:00-5:00 pm. Walter J. "Jess" Clifford, M.S.= "Basic Biocompatibility". Register through: Clifford Consulting. P.O. Box 17597, Colorado Springs, CO 80935. Phone: (719) 550-0008. Fax: (719) 550-0009.

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IAOMT MIDWINTER MEETING ON BIOCOMPATIBLE DENTISTRY.

Friday, 18 February 1994. 8:30 am - 5:00 pm.

Chicago, Illinois.

Hotel Reservations: The Inter-Continental Hotel, 505 N. Michigan Ave. Chicago, IL 60611. Phone: (312) 944-4100. Fax: (312) 944-3050.

» Program: Murray J. Vimy, D.M.D. = "Research on Dental Amalgam".

» James Masi, Ph.D. = "Corrosive Chemistry".

» Michael F. Ziff, D.D.S. = "Toxicology of Amalgam Mercury".

» Walter "Jess" Clifford, M.S. = "Immunology of Dental Materials".

» Faillip P. Sukel, D.D.S. = "Standards of Care".

Fees (Payable to "IAOMT"): Pre-Registration= $225.00; On-Site Registration= $250.00; IAOMT Members= $200.00; Staff= $70.00.

Contact: IAOMT. P.O. Box 608531, Orlando, FL 32860-8531. Phone/FAX: (407) 298-2450.

Several of the DAMS members have collaborated and published a book titled Defense Against Mystery Syndromes - Revealing the Mystery of "Silver" Fillings. They have done an excellent job on the book and it is complete including 24 personal case histories written by the individuals themselves. By separate mailing from the Foundation For Toxic Free Dentistry, many of you will be receiving a copy. If you receive a copy, we ask that you make a donation to DAMS. Send it to Mary Davis, DAMS., 207 10th Ave. NW, Altoona, IA 50009-1356