WYOMING AG RULES ON ADA AMALGAM POSITION!!

Attorney Charles G. Brown of the “Consumers for Dental Choice” project has received a letter from the office of the Attorney General (AG) in Wyoming. This letter stated that the Wyoming Board of Dental Examiners lacks jurisdiction to enforce the infamous American Dental Association (ADA) position against the removal of mercury dental fillings!

The Wyoming dental board had incorporated the ADA “Principles of Ethics and Code of Professional Conduct” into its Rules for the state. However, the ADA section on amalgam removal (5.A.1) is actually an added “Advisory Opinion” by the legal department of the ADA, which is not included in the Rules for Wyoming.

This point, along with the issue of potential violation of antitrust laws and First Amendment rights, were brought to the attention of the Wyoming AG office by Mr. Brown. As a result, the Wyoming AG office ruled that the dental board lacked jurisdiction to enforce the Advisory Opinion of the ADA Code. This represents a dramatic victory, as it constitutes a legal precedent that can be used in other states that might choose to discipline mercury-free dentists on the basis of the position of the ADA.

PETITION TO STATE DENTAL BOARDS!

The “Consumers for Dental Choice (CFDC)” have sent petitions to the dental boards in all 50 states, with cover letters to every Governor, Attorney General, and dental board Executive Director. These petitions call for action providing a level playing field for mercury-free dentistry and allowing consumers access to information they need to make informed choices.

Attorneys Charles G. Brown and James S. Turner of CFDC have detailed key points in the well-constructed petition. Major points are Constitutional rights of freedom of speech and freedom of choice, along with the potential for violation of Federal Anti-Trust laws. Scientific evidence challenging the safety of mercury fillings and the recent directive from Health Canada are cited as compelling evidence that opposition based on the use of mercury fillings is not a fraudulent action. The fact that the dental boards have the duty to represent the interests of state citizens, rather than those of a portion, albeit majority, of a profession is emphasized.

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CFDC urges all, doctors and consumers, to help support this important drive by sending letters to the Governor, Attorney General, and dental board of the state. Key points that may be addressed include: [consumers/patients] * Support for the CFDC petition; * expression of choice for Hg-free dental fillings; * desire for access to a mercury-free dentist; * emphasis of Constitutional right of access to information for an informed choice; * confirmation that the state dental board has declared neutrality in the mercury filling controversy; and [dentists] * support for the CFDC petition; * desire to be treated fairly by the state dental board; * confirmation of knowledge on the documented science and the position of Health Canada; * emphasis of Constitutional right of free speech; and * confirmation that the dental board has declared neutrality on the controversy.

CFDC recommends attempting to achieve the following goals from the dental boards: 1) The choice of dental fillings is a matter of choice by the consumer, and is an appropriate matter for a dentist to discuss with his or her patients. 2) The dental board will not exercise its disciplinary powers in a discriminatory manner against dentists who practice or advertise mercury-free dentistry.

LATE BREAKING NEWS! Charles G. Brown of CFDC has just contacted Bio-Probe. The response from the states “has overwhelmed us”; he states, “but we need grass roots attention from consumers and dentists!” He noted a reply from the Kansas Attorney General’s office: “There are no dental regulations in place which would prevent any Kansas licensee from discussing the pros and cons about fillings containing silver amalgams.” But, Mr. Brown notes, there are regulations against fraudulent practice of dentistry. Care must be taken to address the controversy only in terms that are well documented, and the opposing position should be given.

CFDC states that dental boards in over a fourth of the states have already promised to take up the issue soon. The following states have set dates to address the petition: Montana= 7 Nov.; Kentucky= 11 Nov.; Ohio= 13 Nov.; Georgia= 14 Nov.; Colorado= 19 Nov.; Arizona= 5 Dec.; Louisiana= 6 Dec.; Virginia= 22-23 Jan.; Idaho= January meeting. WE URGE ALL CONSUMERS AND HEALTH PROFESSIONALS TO ATTEND THESE MEETINGS! Florida and Nevada have stated that they will address the petition, with no date given. Pennsylvania took up the issue in October and reaffirmed its previous position of neutrality. New Mexico took up the issue on 24 October, with no result reported; but a DAMS representative attended to speak on our behalf.

In the past year, the “Consumers for Dental Choice” have won several important victories that are invaluable in securing the rights of mercury-free dentists and dental patients. This effort is vital and deserves the support of everyone. Public support will help provide success to this action that is so important to both patients and mercury-free dentists. PLEASE support this petition in your state, encourage others to also do so, and send contributions. All doctors, at the least, should send an immediate contribution to CFDC, of at least $200. Contact: Consumers for Dental Choice, 1424 16th Street, NW, Suite 105, Washington, DC 20036. The opportunity to secure the rights of patients and mercury-free dentists has arrived; this opportunity MUST be supported!

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ARE DENTAL SHOTS CARCINOGENIC?

Members attending the 1997 Annual Meeting of the International Academy of Oral Medicine and Toxicology (IAOMT) in Toronto were shocked to receive information that dental local anesthetics break down in the body to carcinogenic anilines!

The original local anesthetic (Procaine, or novocaine) is actually manufactured from an aniline. Anilines are commonly called “coal tar derivatives”, and have been found to be cancer causing agents dating back to the late 19th Century. In fact, the first identified carcinogen is the aniline that caused scrotal cancer in chimney sweeps. A number of different anilines have been determined to cause various cancers.

All local anesthetics currently approved for use in the United States (lidocaine, mepivacaine, bupivacaine, procaine, etc.) are broken down in the body to anilines. This has been demonstrated in animal and human studies. In 1993, the Food and Drug Administration (FDA) conducted a tissue study confirming that 67% of lidocaine converts to a known aniline. Animal studies have found that this particular aniline causes cardiotoxicity and a number of cancers (brain and prostate cancers, leukemia, sarcomas, carcinomas). It is also one of the main carcinogens found in tobacco. An injection of only 1 cc of 2% lidocaine provides a dose of this aniline equal to smoking 84,000 cigarettes. The FDA now requires warnings on packages of new pharmaceuticals containing aniline-based local anesthetics.

Human epidemiologic evidence from the World Health Organization suggests (most epidemiology can only suggest) a relation between the advent of the use of local anesthetics and the occurrence of certain cancers, especially breast cancer. Other epidemiologic evidence in California also suggests the relationship to breast cancer.

At this point, it can not be definitely claimed that
the use of dental local anesthetics contributes to the incidence of breast, or any other, cancer. However, certain facts are undeniable: 1) local anesthetics in current use do break down into anilines in the body; 2) the dosage therefrom is not insignificant; 3) these anilines have definitely been shown to be carcinogenic. In view of these facts, this issue should not, and can not, be ignored!

It would seem that, at the very least, patients should be informed of the known information. It might also be wise to explore and utilize as many alternatives to local anesthesia as is possible. Some of these might be the use of microabrasion techniques and possibly Caridex; utilization of sedatives, hypnosis, TENS, and any other suitable pain reduction modality. The use of nitrous oxide sedation is certainly controversial at this time. However, there are scavenging techniques currently available, with more coming, that might alleviate these concerns.

Bio-Probe and the IAOMT are currently investigating the validity of this information. It has already been confirmed that local anesthetics currently used do break down into anilines. The assistance of several universities has been enlisted to evaluate the potential for risk. This issue has been presented by an Oral Surgeon, Dr. Alfred A. Nickel who, along with others, brought forth the information in the 1960’s. Dr. Nickel will make a presentation of the subject at the IAOMT Mid-Year Meeting in Durham, NC on Saturday, 14 March 1998 [See Forum below]. All interested in this subject should be certain to attend this meeting.

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

IAOMT DENTIST WINS AWARD!

Dr. Paul Rubin of Seattle has been recognized by the “1997 Governor’s Awards for Outstanding Achievement in Pollution Prevention” in the State of Washington! Dr. Rubin installed one of the first effective mercury recapturing systems, has developed a recycling program for dental wastewater, and has conducted research on the subject. He sits on the Environmental Committee of the International Academy of Oral Medicine and Toxicology (IAOMT) and his research was published in the Archives of Environmental Health. Congratulations Paul; you have done yourself (and us) proud!

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

ASOMAT SCORES IN AUSTRALIA!

Dr. Roman Lohny, President of the Australasian Society of Oral Medicine and Toxicology (ASOMAT), has good news to report from Australia (ASOMAT is a Chapter of IAOMT). The National Health and Medical Research Council (NHMRC) is the peak scientific advisory body in Australia. It helps formulate policy on health matters and advises the Federal Government on medical issues.

The dental subcommittee, composed primarily of dentists, published a booklet claiming the absolute safety of mercury amalgam fillings. Their conclusions were directed to one reference (the Ahlgqvist et al study from Sweden), but Dr. Lohny carefully examined the study and found that nothing in the study supported the four conclusions of the booklet.

Dr. Lohny informed the NHMRC of the “discrepancy” in the booklet. Finally, after writing several times he received a notification from the head of the NHMRC that he was correct and the booklet was being withdrawn. Even better, Dr. Lohny also discovered, and received confirmation, that the booklet represented the government’s entire written policy and literature review on the subject. He now has also obtained confirmation that NHMRC has NO policy on the topic! Great work Roman and ASOMAT! Another example of how we can, and will, prevail by insisting upon reliance on scientific documentation!

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NEW DMPS STUDY!

Over the past several years, a number of studies have been published demonstrating neurologic damage in dental personnel. Most recently, some of these studies have been related to levels of mercury in urine following “challenge” with the mercury chelating agent DMPS. The foremost scientist involved with these studies is H. Vasken Aposhian, Ph. D. of the University of Arizona in Tucson. One group of dentists studied by Dr. Aposhian consisted of members of the International Academy of Oral Medicine and Toxicology (IAOMT). Dr. Aposhian now wishes to conduct additional DMPS studies on IAOMT dentists. This will be accomplished at the IAOMT Mid-Year Meeting in Durham, NC on 12-14 March 1998.

This study will not require fasting or blood work. Participants will receive a physical exam on the first day, collect an overnight urine sample, receive an injection of DMPS on the second day, and provide a urine sample at 0-2 hours and 2-6 hours following DMPS. Individual results will be provided to participants.

VOLUNTEERS ARE NEEDED for this important study, fifteen for each of two groups (15 start on Thursday, 15 start on Friday). To enroll, call [407-298-2450] or fax [407-298-3075] IAOMT Executive Director Michael F. Ziff as soon as possible.

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AMALGAM MERCURY AND ANTIBIOTIC RESISTANCE.

Readers will readily remember previously re-
ported research demonstrating that dental amalgam mercury contributes to an increase of gastrointestinal microorganisms resistant to mercury and also to various antibiotics. The increase in antibiotic resistant organisms, of course, has become a major problem in medical therapy. The previously published research was conducted at three major Universities (Georgia, Calgary and Tufts), and was led by Dr. Anne O. Summers.

On 14 September 1997, the English newspaper The Sunday Telegraph featured an article entitled: “Filling and Drilling Breeds Superbugs: Dentists’ Mercury May be to Blame.” It was reported that a team of scientists at London’s University College and Eastman Dental Institute, led by Professor Robin Rowbury, are studying samples taken from 6,000 human subjects with known levels of amalgam mercury exposure. Professor Rowbury stated: “If there is an association between the use of mercury amalgams and antibiotic resistance, then the implications are enormous.”

The article also stated: “So far only animal studies of the link between fillings and antibiotic resistance have been carried out. These have, however, confirmed that more fillings increase the prevalence of antibiotic resistant bacteria.” [For more on this subject see study by Edlund et al in following Science section.]

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SCIENCE

Effect of Subchronic Mercury Exposure on Electrocoorticogram of Rats.
Desi, I; Nagymajtenyi, L; Schulz, H.

ABSTRACT: Mercury is a neurotoxic compound causing irreversible disorders of the central and peripheral nervous system. In some of the previous human and experimental studies mercury also affected some functional neurological parameters such as EEG, and cortical evoked potentials. In the present study, the effect of subchronic (4, 8, and 12 weeks) relatively low level (0.4, 0.8, and 1.6 mg/kg mercury in form of HgCl2, per os gavage) treatment on the basic cortical activity was investigated. Certain parameters of electrocoorticogram (EcoG) recorded simultaneously from the primary somatosensory, visual and auditory centers were analyzed.

The results showed that mercury had a dose- and time-dependent effect on the examined EcoG parameters, and the changes became significant by the end of the experiment of week 12.

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Localized Cellular Inflammatory Responses to Subcutaneously Implanted Dental Mercury.
Nadarajah, V; Neiders, ME; Aguirre, A; Cohen, RE.

ABSTRACT: Previous reports have demonstrated mercury accumulation and toxicity in oral tissues following exposure to mercury vapor from dental amalgam restorations. In the present study, inflammatory responses to subcutaneously administered mercury were assessed histopathologically and immunocytochemically in a rat model system. A panel of six well characterized monoclonal antibodies specific for monocytes, macrophage subsets, T and B lymphocytes, and major histocompatibility complex (MHC) class II (la) determinants was used to quantitate alterations in mononuclear cell subsets in situ at time intervals from 2 d to 8 wk.

The results revealed acute inflammatory cell infiltration at 2 and 3 d, followed by chronic inflammation that persisted after 8 wk. The numbers of monocytes, resident macrophage subsets, and mononuclear cells expressing la antigen were significantly different from control tissues at 1-2 wk. The numbers of resident macrophages remained significantly higher even after 8 wk. These data showed that in situ mercury accumulation can lead to altered expression of MHC class II determinants with persistent chronic inflammation and shifts in mononuclear cell subpopulations.

BIO-PROBE COMMENT: Many of the “previous reports”, dating back to 1960, mentioned in this study were presented by Dr. Michael F. Ziff at the 1991 NIH/NIDR “Technology Assessment Conference”, which was later published [Ziff, MF, Documented Clinical Side-Effects to Dental Amalgam, Advances in Dental Research, 6:131-134, Sep 1992]. The authors of the present study are with the Department of Oral Diagnostic Sciences, School of Dental Medicine, State University of New York at Buffalo. The fact that dental amalgam mercury contributes to periodontal disease should now be uncontestable, even within the dental establishment!

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Effects of Inorganic Mercury and Methylmercury on the Ionic Currents of Cultured Rat Hippocampal Neurons.
Szücs, A; Angiello, C; Salânski, J; Carpenter, DO.

ABSTRACT: 1. The effects of inorganic Hg2+ and methylmercuric chloride in the ionic currents of cultured hippocampal neurons were studied and compared. We examined the effects of acute exposure to the two forms of mercury on the properties of voltage activated Ca2+ and Na+ currents and N-methyl-D-aspartate (NMDA)-induced currents.
2. High-voltage activated Ca$^{2+}$ currents (L-type) were inhibited by both compounds at low micromolar concentrations in an irreversible manner. Mercuric chloride was five times as potent as methyl mercury in blocking L-channels. 3. Both compounds caused a transient increase in the low-voltage activated (T-type) currents at low concentrations (1 microM) but blocked at higher concentrations and with longer periods of time.

4. Inorganic mercury blockade was partially use dependent, but that by methyl mercury was not. There was no effect of exposure of either form of mercury on the I-V characteristics of Ca$^{2+}$ currents. 5. Na(+)- and NMDA-induced currents were essentially unaffected by either mercury compound, showing only a delayed nonspecific effect at a time of overall damage of the membrane.

6. We conclude that both mercury compounds show a relatively selective blockade of Ca$^{2+}$ currents, but inorganic mercury is more potent than methyl mercury.

**BIO-PROBE COMMENT:** This is additional evidence that inorganic mercury (Hg$^{2+}$) can now be considered at least as toxic as is methyl mercury, and probably more so. The confusion results from a lack of knowledge about the toxicokinetics of various forms of mercury. If exposure is to inorganic mercury (i.e., mercuric chloride), less mercury reaches the tissues due to the poor absorption rate. Methyl mercury has been found to be very toxic because of its high absorption rate (gastrointestinally by ingestion). Now, it has become clear that mercury vapor (Hg0) is extremely toxic because of its high absorption rate by inhalation into the blood and by transmembrane penetration into cells, where it is oxidized into inorganic mercury ions (Hg$^{2+}$).

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Resistance of the Normal Human Microflora to Mercury and Antimicrobials After Exposure to Mercury From Dental Amalgam Fillings.

Edlund, C; Bjorkman, L; Ekstrand, J; Sandborgh-Englund, G; Nord, CE.


**ABSTRACT:** The concentrations of mercury in saliva and feces and the resistance pattern of the gastrointestinal microflora were investigated for 20 subjects. Ten patients, with a number of 19 amalgam surfaces, had all amalgam fillings removed during one dental session. Ten subjects without amalgam fillings served as a control group. Saliva and fecal samples were collected before amalgam removal and 2, 7, 14, and 60 days afterward.

Mercury levels in saliva and feces correlated significantly with the number of amalgam surfaces. No differences in the resistance pattern of the oral microflora were detected between the two groups. In the amalgam group there was an increase in the relative number of intestinal microorganisms resistant to mercury, ampicillin, cefoxitin, erythromycin, and clindamycin on days 7-14. This was not statistically significant in light of the normal variations of the control group. A significant correlation between the prevalence of mercury resistance and multiple antimicrobial resistance in intestinal bacterial strains was observed.

**BIO-PROBE COMMENT:** Ten subjects and ten controls is an extremely small sample in human studies because, as noted by the authors, the large number of variables to consider in humans. In view of this small sample, the significance of the findings in intestinal flora magnifies tremendously. The findings of mercury correlation in saliva and feces adds further confirmation to significant human exposure to amalgam mercury.

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Thiol Compounds Inhibit Mercury Induced Immunological and Immunopathological Alterations in Susceptible Mice.

Hu, H; Moller, G; Abedi-Bulugerdi, M.


**ABSTRACT:** In vitro mercury induces a high proliferative response in splenic lymphocytes and in vivo it induces a systemic autoimmune disease in susceptible mouse strains. This disease is characterized by increased serum levels of IgE and IgG1 antibodies, by the production of anti-nuclear antibodies and by the formation of renal immune complex deposits.

We have previously found that the presence of 2-mercaptoethanol (2-ME) inhibited mercury induced cell proliferation in vitro. In this study, we tested the effects of four other thiol compounds, namely dithiothreitol (DTT), L-cysteine, meso-2,3-dimercaptopropanesulfonic acid (meso-DMSA) and 2,3-dimercaptopropanesulfonic acid, Na salt (DMPS) on mercury induced immunological changes both in vitro and in vivo.

We found that in vitro, the addition of all thiol compounds abrogated mercury induced cell aggregation and proliferation. In vivo, injection of meso-DMSA and/or DMPS (s.c. or i.p.) Immediately following exposure to mercury markedly decreased IgG1 synthesis in spleen cells and serum IgE levels in mercury susceptible SJL mice. Treatment with DMPS also prevented mercury induced IgG1 anti-nuclear antibody synthesis and the development of mesangial IgG1 immune complex deposits in SJL mice.

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Effect of Dimercaptosuccinic Acid Per Os On Distribution and Excretion of $^{210}$Pb and $^{203}$Hg in Mice.
Liang, YY; Zhang, JS; Tao, ZQ; Yan, XM; Xu, XH; Chen, ZJ.

**ABSTRACT:** Sodium dimercaptosuccinate (Na-DMSA) ip 1 g.kg-1, dimercaptosuccinic acid (DMSA) ig 1g.kg-1 with NaHCO3 or Na-citrate 3 g.kg-1 was given to mice, separately. It enhanced the excretion of $^{210}$Pb in urine about 3.4, 3.8, 3.6, and 2.3 times vs control, respectively within 24 h. It enhanced the excretion of $^{203}$Hg in urine about 2.4, 2.3, 3.3, and 2.7 times, respectively within 24 h.

Fecal excretion was not significantly elevated vs control. Tissue radioactivities showed a remarkable decrease in the levels of $^{210}$Pb and $^{203}$Hg in most organs, but DMSA increased the $^{210}$Pb content in kidney. The therapeutic effect of ig DMSA was similar to that of ip sodium dimercaptosuccinate.

**BIO-PROBE COMMENT:** The fascinating aspect of this study is the evidence that these chelating agents remove mercury from tissues, rather than just kidneys and bloodstream.

Effects of Sulphydryl Compounds on the Accumulation, Removal and cytotoxicity of Inorganic Mercury by Primary Cultures of Rat Renal Cortical Epithelial Cells.
Endo, T; Sakata, M.

**ABSTRACT:** The effects of sulphydryl compounds on the accumulation, removal and cytotoxicity of inorganic mercury (Hg) were investigated in primary cultures of rat renal cortical epithelial cells. The compounds investigated were 2,3-dimercaptosuccinic acid, 2,3-dimercapto-1-propanol, D-penicillamine, glutathione (GSH) and L-cysteine. In the accumulation experiment, the cells were co-incubated with Hg and the above compounds for 30 min (short term) or 18 hr (long term). In the removal experiment, cells incubated with Hg were further incubated with the above compounds for 30 min. In both experiments, the alleviative effect of the compounds on the cytotoxicity was estimated by the uptake of neutral red by cell growth.

2,3-Dimercaptosuccinic acid had the highest antioxidant effects except for Hg removal. 2,3-Dimercapto-1-propanol exerted the least antioxidant effects in the short term, as well as in the long term experiments.; 2,3-dimercapto-1-propanol increased the Hg accumulation and the cytotoxicity despite its removal of most of the Hg. Although D-penicil-

amine, L-cysteine and GSH did not increase the Hg removal in the long term experiment, other antioxidal effects were seen.

Increased Inorganic Mercury in Spinal Motor Neurons Following Chelating Agents.
Ewan, KB; Pamphlett, R.

**ABSTRACT:** Heavy metal toxicity has been implicated in the pathogenesis of motor neuron diseases. In an attempt to assess the efficacy of chelating agents to remove mercury from motor neurons, we quantitated the effect of the chelating agents meso-2,3-dimercaptosuccinic acid (DMSA) and 2,3-dimercaptopropane-1-sulphonate (DMPS) on the burden of inorganic mercury in mouse spinal motor neurons.

Mice were injected intraperitonealy with 1.0 mg HgCl2/kg body weight and one week later with either 4,400 mg/kg DMPS, 3,600 mg/kg DMSA or 5% NaHCO3 (control) over 4 weeks. Mercury deposits in motor neurons of 50 micron frozen sections of lumbar spinal cord were visualized with an autometallographic technique. Optical sections of silver enhanced deposits were acquired using a confocal microscope in reflective mode and the volume of the deposits within the perikaryon was estimated.

Mercury deposits occupied significantly more volume in motor neurons after both DMPS (7.4%, SD ± 0.7%) and DMSA (8.0% SD ± 0.7%) treatment than in controls (4.3% SD ± 1.7%). The higher levels of neuronal inorganic mercury may be due to increased entry of mercury into motor axons across the neuromuscular junction as a result of chelator induced elevated circulating mercury.

Clearance Half Life of Mercury in Urine After the Cessation of Long Term Occupational Exposure: Influence of a Chelating Agent (DMPS) on Excretion of Mercury in Urine.
Sallsten, G; Barregard, L; Schutz, A.

**ABSTRACT:** The elimination of mercury (Hg) in urine was investigated in 12 former chloralkali workers exposed to metallic Hg vapour for two to 18 (median five) years. Morning urine samples were taken on several (median 9) occasions after change of employment or retirement. The median follow up time was 28 months.

The decrease in concentration of Hg in urine (U-Hg) was well characterized by a one compartment model. Three different regression methods were used; non-linear least squares regression (NLSR), weighted non-linear least squares regression (WNLSR), and linear least squares regression
(LLSR) after log transformation of the U-Hg data. The median half life from the WNLSR method was 55 days. There were no large differences in the half life estimates given by the WNLSR or the NLSR methods, but for five subjects the LLSR method gave poor fits. There was a non-significant tendency towards longer half lives with higher initial U-Hg.

About three years after the cessation of occupational exposure a mobilization test with 2,3-dimercapt propane-1-sulphonate (DMPS) was performed on seven subjects. Excretion of Hg, copper (Cu), and zinc (Zn) in urine was estimated before and after the ingestion of 300 mg of DMPS. Treatment with DMPS increased 24 hour urinary excretion by a factor of 7.6 for Hg, 12 for Cu, and 1.5 for Zn. The relative increase in U-Hg was not significantly higher than that obtained in a previous study of an occupationally unexposed group. A major proportion (62%) of Hg excreted during 24 hours after DMPS appeared in the first six hours.

An Ultrastructural Study of Root Canal Walls in Contact with Endodontic Biomaterials.

Guigand, M; Vulcan, J-M; Dautel-Morazin, A; Bonnaure-Mallet, M.


**ABSTRACT:** The aim of this in vitro study was to compare structural and ultrastructural changes to the unmineralized extracellular matrix after using two root canal restoration materials, one calcium hydroxide based and the other calcium oxide based. Pig teeth were restored with no preliminary root canal preparation. The filling materials were left in place for 8, 15, or 21 days. Samples were then examined using various microanalytical techniques and, in parallel, by backscattered electron image (BEI) scanning electron microscopy.

The Ca/P ratios obtained by microanalysis were higher for samples restored with calcium oxide. In addition, the distances over which the ratios increased were also greater than those obtained using calcium hydroxide. BIE photographs confirm these results and show corresponding retrodiffusion fringes.

**BIO-PROBE COMMENT:** These two studies provide further confirmation that calcium oxide based endodontic materials (ie, Biocalex) penetrate and calcify devital dentinal tubules. No other material will do this, not even calcium hydroxide (although both materials are excellent bactericides, especially for anaerobes).

The authors made several statements worthy of note [These authors are affiliated with the Faculty of Dentistry, University of Rennes-France: Dr. Guigand is Assistant Professor of Endodontics; Dr. Vulcan is Professor, head of the Department of Endodontics; Dr. Dautel-Morazin is Associate Professor of Endodontics; Dr. Bonnaure-Mallet is Professor, head of Laboratory of Buccal Biology]. They concluded that “It thus appears that calcium oxide based endodontic preparations meet the therapeutic requirements of eliminating the unmineralized extracellular matrix and of producing a tight, long lasting seal (pg 329, May); and “Our study confirms that Ca++ ions diffuse out of calcium oxide and calcium hydroxide materials. However, calcium oxide preparations, which also appear to possess properties specific to calcium hydroxide, enhance intratubular penetration, decrease the interface and promote the transfer of calcium from the filling material to the radicular dentine. These results have clinical significance and may lead to new endodontic treatments. (Pg 390, June).

Citing a number of previously published studies, the authors explained that for biomineralization, the massive intratubular diffusion of Ca++ ions is caused by the presence of intratubular glycosaminoglycans and phosphoproteins. Hydrophilic glycosaminoglycans enhance calcium fixation, while anionic phosphoproteins produced by odontoblasts have a high affinity for calcium. They noted that when calcium oxide encounters water, it forms calcium hydroxide and it forms calcium carbonate when it encounters the carbon dioxide produced by protein degradation.

It should be emphasized that these results were obtained without endodontic preparation. The
authors noted that the creation of a smear layer from filing could block access into the tubules. For this reason, the use of a material such as 17% EDTA Solution to remove the smear layer plugs would be advisable. [NOTE: The Food and Drug Administration (FDA) granted permission to market 'Biocalex' in the United States to Bio-Probe in July of 1994. Interested dentists may call 800-282-9670 to order.]

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FORUM

International Academy of Oral Medicine and Toxicology

IAOMT 1998 MID-YEAR MEETING

DATE: 13-14 March 1998 (Friday-Saturday).
SITE: Durham, North Carolina.


FRIDAY PROGRAM:

☐ Murray J. Vimy, DMD: “Scientific Review of Dental Amalgam Biocompatibility.”

☐ Woodhall Stopford, MD, MSPH: “Peripheral Neurologic Effects From Acute Mercury Exposure.”

IAOMT WORKSHOPS: Friday afternoon, 13 March, 1:15-5:00 pm. [* designates required Core Curriculum Course for IAOMT Accreditation, others apply to elective requirements.]


*Marcia A. Basciano, DDS/Paul G. Rubin, DDS: “Environmental Aspects of Dental Mercury.”

*David W. Regiani, DDS: “Dental Corrosion.”

*Phillip P. Sukel, DDS/Richard D. Fischer, DDS: “IAOMT Standards of Care.”


J. C. Pendergrass, PhD: “Biodental Toxicology.”

Ronald M. Dressler, DDS: “The Use of Biocalex in Endodontic Therapy.”

SATURDAY PROGRAM:

• Thomas G. Ford, DDS: “The Biocompatibility of Dental Implants.”

• Agnes Koubi, DDS: “Oral Toxicology: The Clinical Approach.”

• Michael Aschner, PhD: “In Utero Mercury Vapor Exposure and Metallothionein Expression in Rat Brain and Astrocytes.”

• Boyd E. Haley, PhD: “Studies on the Toxicant Effects of Mercury, Avital Teeth and Cavitational Material.”

• Alfred A. Nickell, DDS, MS: “Local Anesthetic Toxicology.”

SPECIAL EVENTS:

Welcome No-Host Reception; Thursday, 12 March, 7:30 pm.

DMPS Study: Dr. H. Vasken Aposhian; participant arrival by 3:00 pm, Thursday, 12 March 1998 required.

IAOMT Board Meeting; Friday, 13 March, 6:30 pm (all members invited).

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American Academy of Head, Neck & Facial Pain

AAHNFP Mid-Winter Symposium


SITE: Scottsdale, Arizona.

HOTEL: Radisson Resort Hotel, 7171 North Scottsdale Road, Scottsdale, AZ 85252-3696; (602) 991-3800. Special room rate= $130.00 (s/d); 6 December 1997 deadline.

MEETING REGISTRATION: AAHNFP, 520 West Pipeline Road, Hurst, TX 76053; (817) 282-1501, (800) 322-8651. Members= $495.00; non-members- $595.00.

PROGRAM: Myofascial Disease: Diagnosis and Treatment; James R. Fricton, DDS; Bernadette Jaeger, DDS; Gerald J. Murphy, DDS; Gary E. Myerson, MD; Larry L. Tilley, DMD.