PEER REVIEW - A CREDIBILITY ISSUE!

As the controversy over potential health risks from dental amalgam-derived mercury magnifies, the question of credibility becomes predominant. Increasingly, spokespersons for the dental profession find themselves at odds with medical scientists.

The construction and placement of an amalgam dental filling is most certainly in the realm of dentistry. Should the filling have adverse effects within the oral cavity, the evaluation and therapy would also be considered appropriate for dentists. If, however, the filling material released a xenobiotic that caused pathophysiological effects elsewhere in the human body, dentists would be charged with "practicing beyond the scope of dentistry" for addressing those effects. Indeed, dentists have been disciplined for such a transgression.

What rationale, then, can be used to justify the attitude that representatives of the dental profession are more qualified to judge the systemic adverse effects of amalgam-derived mercury than are medical scientists? It is clearly a matter of credibility, which begins in the dental schools and ends in the validity of peer review of dental journals.

Dental materials departments have traditionally been staffed with materials engineers, such as metallurgists. More recently, dentists with advanced degrees in the engineering aspects of dental materials have predominated. Even so, the education of these dentists is rarely, if ever, on a level with experts in the biological sciences - such as physiologists, biochemists or toxicologists. This is not the case in the medical profession, where substances used that may have a physiologic effect on humans are first thoroughly evaluated by appropriate experts.

Papers published in dental journals are subject to review by dentists, if at all. This constitutes valid "peer review" if the topic is dental. However, this is hardly peer review if the topic deals with systemic pathophysiological effects of mercury exposure from dental amalgam even, or rather especially, if the paper is written by dentists.

A dentist presenting a paper on the construction and delivery of the ideal three unit bridge or periodontal guided tissue regeneration would certainly not submit the paper to a toxicology or immunology journal. By the same rationale, how can papers on the immune system effects of dental amalgam or, for that matter, the systemic biocompatibility of dental amalgam published in the Journal of the American Dental Association be considered qualified by valid peer review.

For valid peer review of medical science, few journals in the world can match the credentials of the Federation of American Societies for Experimental Biology (FASEB). Preceding our presentation of two recent abstracts from FASEB, a brief description of those credentials is in order.

WHAT IS THE "FASEB JOURNAL"?
The FASEB Journal is the official peer-reviewed, monthly research publication of the Federation of American Societies for Experimental Biology (FASEB). Since its inception in 1983, the Journal has established a reputation for excellence in scientific publishing, attracting contributions from leading scientists around the world. The Journal covers a broad range of disciplines, including molecular biology, genetics, neuroscience, immunology, and biochemistry. Each issue includes original research articles, reviews, and commentaries that advance our understanding of biological processes.

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for Experimental Biology." Approximately 41,000 biomedical scientists are members of FASEB, which includes The American Physiological Society, The American Society for Biochemistry and Molecular Biology, The American Society for Pharmacology and Experimental Therapeutics, The American Society for Investigative Pathology, The American Association of Immunologists, The American Society for Cell Biology, and others. The FASEB Journal has a prestigious and internationally renowned editorial board, comprised of leading scientists selected primarily from the academic research sector.

The Institute for Scientific Information (ISI), in Philadelphia, PA, publishes the annual "Science Citation Index" which both lists and ranks all major science journals, in the physical and biological (biomedical) sciences, mathematics, computer science and engineering. These data are compiled annually in the "ISI Journal Citation Reports" on nearly 6000 of the world's leading scientific journals (comprising 3000 publishers from 60 nations).

ISI rankings for IMPACT are based upon the average number of recent citations to articles published by a given journal over the previous two years. By these criteria, for 1993, in the life sciences the worldwide IMPACT factor ranking for the FASEB Journal is number 1 in biology and number 4 in biochemistry and molecular biology. Overall, the FASEB Journal ranks 15th in IMPACT among approximately 6000 journals representing all scientific disciplines.

Based upon the foregoing, it can be stated unequivocally that the FASEB Journal is one of the most prestigious and authoritative scientific publications in the world.

A final word on credibility! We have spoken to a number of authorities and spokespersons for the dental profession regarding the medical research conducted on adverse effects of dental amalgam mercury, much of which has been published in esteemed, validly peer-reviewed medical journals (such as the FASEB J and the American J. of Physiology). Without exception, they have claimed that all of the research is "flawed" and "invalid" for a variety of reasons, without offering published contradictory documentation. These dental critics, almost invariably, admit that they have never read the studies they so glibly criticize, but are merely repeating what they have read in dental journals. This is hardly credible professional conduct for an issue with such potential impact on the public health!!!

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ABSTRACTS

Mercury Exposure from "Silver" Tooth Fillings: Emerging Evidence Questions a Traditional Dental Paradigm.
Lorscheider, FL; Vimy, ML; Summers, AO.

ABSTRACT: For more than 160 years dentistry has used silver amalgam, which contains approximately 50% Hg metal, as the preferred tooth filling material. During the past decade medical research has demonstrated that this Hg is continuously released as vapor into mouth air, then it is inhaled, absorbed into body tissues, oxidized to ionic Hg, and finally covalently bound to cell proteins. Animal and human experiments demonstrate that the uptake, tissue distribution and excretion of amalgam Hg is significant, and that dental amalgam is the major contribution source to Hg body burden in humans.

Current research on the pathophysiological effects of amalgam Hg has focused upon the immune system, renal system, oral and intestinal bacteria, reproductive system, and the central nervous system. Research evidence does not support the notion of amalgam safety.

BIO-PROBE COMMENT: This landmark review paper addresses in detail the various points noted in the abstract and concludes: "The experimental evidence indicates that amalgam Hg has the potential to induce cell or organ pathophysiology. At the very least, the traditional dental paradigm, that amalgam is a chemically stable tooth restorative material and that the release of Hg from this material is insignificant, is without foundation.......It would seem that now is the time for dentistry to use composite (polymeric and ceramic) alternatives and discard the metal alchemy bestowed upon its profession from a less enlightened era. Although human experimental evidence is incomplete at the present time, the recent medical research findings presented herein strongly contradict the unsubstantiated opinions pronounced by various dental associations and related trade organizations, who offer assurances of amalgam safety to dental personnel and their patients without providing hard scientific data, including animal, cellular and molecular evidence, to support their claims."

The tremendous prestige of the publication journal and its widespread distribution to the medical scientific community indicates a potentially dramatic impact for this review paper. Moreover, it underscores the widening breach between the position of the dental establishment and the medical scientific community in the controversy over the biocompatibility of dental amalgam.

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Mercury Vapor Exposure Inhibits Tubulin Binding to GTP In Rat Brain: A Molecular Lesion Also Present in Human Alzheimer Brain.
Lorscheider, FL; Vimy, MJ; Pendergrass, JC; Haley, BE.

ABSTRACT: Methyl mercury will interact with tubulin causing disassembly of microtubules that function to maintain neurite structure. Numerous reports also establish that mercury vapor (Hg\(^\text{V}\)) is continuously released from "silver" amalgam tooth fillings into mouth air.
In the present study rats were exposed to Hg$^0$ 4 h/day for 0, 2, 7, 14 and 28 days at 250 mcg Hg/m$^3$ air, a concentration present in mouth air of some humans with large numbers of amalgam fillings. Average rat brain Hg concentrations increased significantly (40-100 fold) with duration of Hg$^0$ exposure.

By day 14 of Hg$^0$ exposure, photoaffinity labelling of the b-subunit of the tubulin dimer with [α$^{32}$P]8N3GTP in brain homogenates was decreased 75%, as seen on analysis of SDS-PAGE autoradiograms.

The identical neurochemical lesion of similar magnitude is evident in Alzheimer brain homogenates when compared to human age-matched controls. Since the rate of tubulin polymerization is dependent upon binding of tubulin dimers to GTP, we conclude that chronic inhalation of low-level Hg$^0$ can inhibit polymerization of tubulin essential for formation of microtubules.

**BIO-PROBE COMMENT:** This study represents the latest information possibly connecting mercury to Alzheimer's Disease (AD). The information began some ten years ago with human autopsy studies conducted at the University of Kentucky. Three published studies showed high levels of mercury in AD brains compared to controls; first in whole brain tissue, then regional levels where AD damage is predominant, and finally in cellular and subcellular fractions. Next, other scientists at the University of Kentucky found AD-type damage in rats fed mercury, while no damage was found in the aluminum-fed rats. The next step was the discovery of the AD-type molecular lesion found in rats that were fed mercuric chloride in drinking water. This latest study found the AD-type molecular lesion in rats that were administered mercury vapor in the amounts to which some humans with large numbers of amalgam fillings are exposed.

Intake of Mercury from Fish, Lipid Peroxidation, and the Risk of Myocardial Infarction and Coronary, Cardiovascular, and Any Death in Eastern Finnish Men.
Salonen, JT; Seppanen, K; Nyyssonen, K; Korpela, H; Kauhanen, J; Käntola, M; Tuomilehto, J; Esterbauer, H; Tatzber, F; Salonen, R.

**ABSTRACT:** Background: Even though previous studies have suggested an association between high fish intake and reduced coronary heart disease (CHD) mortality, men in Eastern Finland, who have a high fish intake, have an exceptionally high CHD mortality. We hypothesized that this paradox could be in part explained by high mercury content in fish.

Methods and Results: We studied the relation of the dietary intake of fish and mercury, as well as hair content and urinary excretion of mercury, to the risk of acute myocardial infarction (AMI) and death from CHD, cardiovascular disease (CVD), and any cause in 1833 men aged 42 to 60 years who were free of clinical CHD, stroke, claudication, and cancer. Of these, 73 experienced an AMI in 2 to 7 years. Of the 78 deceased men, 18 died of CHD and 24 died of CVD. Men who had consumed local nonfatty fish species had elevated hair mercury contents. In Cox models with the major cardiovascular risk factors as covariates, dietary intakes of fish and mercury were associated with significantly increased risk of AMI and death from CHD, CVD, and any death.

Men in the highest tertile (≥22.0 mcg/g or higher) of hair mercury content had a 2.0-fold (95% confidence interval, 1.2 to 3.1; P = .005) age- and CHD-adjusted risk of AMI and a 2.9-fold (95% CI, 1.2 TO 6.6; P = .014) adjusted risk of cardiovascular death compared with those with a lower hair mercury content. In a nested case-control subsample, the 24-hour urinary mercury excretion had a significant (P = .042) independent association with the risk of AMI. Both the hair and urinary mercury associated significantly with titers of immune complexes containing oxidized LDL.

Conclusions: These data suggest that a high intake of mercury from nonfatty freshwater fish and the consequent accumulation of mercury in the body are associated with an excess risk of AMI as well as death from CHD, CVD, and any cause in Eastern Finnish men and this increased risk may be due to the promotion of lipid peroxidation by mercury.

**BIO-PROBE COMMENT:** This study mentions mercury exposure from amalgam dental fillings, but does not incorporate that exposure as a covariable risk factor. The study also addresses the influence of selenium as a mitigating factor on the toxic effects of exposure to mercury. However, it does not reference the 1978 findings of the prestigious U.S. National Academy of Sciences, which concluded that methylmercury derived from fish is not as toxic as that from other sources because fish with elevated levels of methylmercury also contain elevated selenium levels. As methylmercury and mercury vapor (as derived from dental amalgam) are both lipid soluble and mercury vapor has been shown to target cardiovascular tissue, it is possible that a similar study investigating mercury vapor might be even more dramatic.

We would also like to point out that the pharmacokinetics of mercury vapor and methyl mercury differ. Unlike mercury vapor, exposure to methylmercury results in a substantial localization in red blood cells. Correlations of methylmercury in blood and hair are far stronger than those correlations resulting from exposure to mercury vapor.

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Psychomotor Testing of Dentists with Chronic Low-Level Mercury Exposure.
Ritchie, KA; MacDonald, EB; Hammersly, R; McGowan, DA; Dale, IM; Wenes, K.

**ABSTRACT:** There is still widespread concern about possible ill effects of chronic low-level mercury exposure on dentists, staff and patients. 20 experienced general practitio-
ners (mean age 41), and 19 first year post-qualification dentists (mean age 23), were tested, as were a control group of 40 doctors, 20 "older" (mean age 46) and 20 "younger" (mean age 28). A computerized battery of psychomotor tests developed for drug studies by Cognitive Drug Research was used, along with a questionnaire on age, sex, alcohol consumption, regular medication, general health (supplemented by the 12-question version of the General Health Questionnaire), and some aspects of practice procedure, including any recent mercury spillage. Their urine samples were analyzed by cold atomic absorption spectroscopy and related to creatinine content as a measure of urine concentration. The Robertson Institute of Biostatistics (University of Glasgow), analyzed data from the 42 measurements from the 8 tests along with the results of the questionnaire and of the urine testing.

The median mercury/creatinine ratios (nmol/mmol) for older dentists were 3.65 (range 1.4-17.6), younger dentists 1.8 (0.7-16.6), older controls 0.95 (0.2-15), and younger controls 1.25 (0.5-6.1). Three older and one younger dentists had levels above the 5 mg/mmol creatinine considered to be the normal background level. Older dentists scored faster Mean Reaction times, (t-test, p) and poorer Mean Immediate, (p), and Mean Delayed, (p), Word Recall, than the other groups, but there were no differences in the tests of Number Vigilance, Choice Reaction Time, Spatial Memory, Memory Scanning, or Word Recognition. No differences were shown in GHQ responses.

Oldest dentists had faster reaction times, perhaps due to occupational experience, but impaired memory retrieval, which could not be related to any confounding factors, and could be due to chronic low-level mercury exposure. The CDR testing system is suitable for larger scale studies of effects of mercury exposure on dentists.

**BIO-PROBE COMMENT:** It has now been well established scientifically that measurements of mercury in urine are not reflective of body burden until after administration of a mercury chelating agent, such as DMPS or DMSA. This knowledge is apparently taking some time to penetrate into the dental scientific community. Even with this flaw, this is yet another study demonstrating neurobehavioral dysfunction in dentists, attributable to chronic low-level mercury exposure.

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Long-Term Mercury Excretion in Urine after Removal of Amalgam Fillings.
Bergerow, J; Zander, D; Freier, I; Dunemann, L.

**ABSTRACT:** The long-term urinary mercury excretion was determined in 17 28-to 55-year-old persons before and at varying times (up to 14 months) after removal of all (4-24) dental amalgam fillings.

Before removal the urinary mercury excretion correlated with the number of amalgam fillings. In the immediate post-removal phase (up to 6 days after removal) a mean increase of 30% was observed. Within 12 months the geometric mean of the mercury excretion was reduced by a factor of 5 from 1.44 micrograms/g (range: 0.57-4.38 micrograms/g) to 0.36 microgram/g (range: 0.13-0.88 microgram/g). After cessation of exposure to dental amalgam the mean half-life was 95 days.

These results show that the release of mercury from dental amalgam contributes predominantly to the mercury exposure of non-occupationally exposed persons. The exposure from amalgam fillings thus exceeds the exposure from food, air and beverages.

Within 12 months after removal of all amalgam fillings the participants showed substantially lower urinary mercury levels which were comparable to those found in subjects who have never had dental amalgam fillings. A relationship between the urinary mercury excretion and adverse effects was not found. Differences in the frequency of effects between the pre- and the post-removal phase were not observed.

**BIO-PROBE COMMENT:** This study provides important information regarding reduction of mercury body burden following removal of amalgam dental fillings (without utilization of mercury chelating agents). It should be noted that although measurements of mercury in blood and urine do not correlate to body burden or toxic effects, they do represent an indication of exposure. Hence, the findings of this study that urinary mercury levels responded to amalgam removal but did not correlate to adverse effects corresponds to previous findings.

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Ultramicroanalysis of Dental Plaque Films by Total Reflection X-ray Fluorescence.
Von Bohlen, A; Rechmann, P; Tourmann, JL; Klockenkemper, R.

**ABSTRACT:** Microgram quantities of dental plaque were taken near amalgam fillings, gold crowns and intact teeth. Such extremely small samples can be analyzed by total reflection X-ray fluorescence (TXRF), a fairly new variant of energy dispersive X-ray fluorescence (EDXRF). More than sixty samples were examined directly without chemical pre-treatment.

Fifteen elements of interest were detected simultaneously within a wide range of mass fraction and with detection limits of several mg/kg. A significant correlation of the Hg-accumulation in plaque and the amalgam fillings was established. Near these fillings Hg mass fractions can reach a level of 300 mg/kg. The results for other elements, e.g. Au, are less significant.

**BIO-PROBE COMMENT:** It has been well documented that mercury can cause periodontal damage, as can the
proximity of amalgam fillings to gingival tissue. The accumulation of amalgam mercury in dental plaque is an interesting contribution to this knowledge.

Contact Stomatitis to Mercury Associated with Spontaneous Mononuclear Cell Infiltrates in Brown Norway (BN) Rats with HgCl₂-induced Autoimmunity.
Warfinge, G; Larsson, A.

**ABSTRACT:** Light microscopy and immunocytochemistry have been used to study the tissue reaction to non-irritant concentrations of mercury painted onto the oral mucosa of genetically mercury-sensitive BN rats.

Low-dose skin injections of HgCl₂ in BN rats result in an autoimmune syndrome, including also a spontaneous migration of T-lymphocytes into the oral mucosa. Our results show that such infiltrates confer an increased degree of reactivity (contact stomatitis) to HgCl₂ painted onto the BN (Hg) rat oral mucosa. In contrast, results were negative in the LEW rat strain, which is also resistant to development of autoimmunity to skin-injected mercury.

The possible involvement of mucosal mercury-loaded macrophages is discussed. The results are also discussed with respect to possible etiologic and pathogenetic mechanisms involved in the development of dental material (amalgam)-associated lichenoid lesions of human oral mucosa.

MR Imaging of Minamata Disease: Qualitative and Quantitative Analysis.
Korogi, Y; Takahashi, M; Sumi, M; Hiral, T; Okuda, T; Shinzato, J; Okajima, T.

**ABSTRACT:** Minamata disease (MD), a result of methylmercury poisoning, is a neurological illness caused by ingestion of contaminated seafood. We evaluated MR findings of patients with MD qualitatively and quantitatively. Magnetic resonance imaging at 1.5 Tesla was performed in seven patients with MD and in eight control subjects.

All of our patients showed typical neurological findings like sensory disturbance, constriction of the visual fields, and ataxia. In the quantitative image analysis, inferior and middle parts of the cerebellar vermis and cerebellar hemispheres were significantly atrophic in comparison with the normal controls. There were no significant differences in measurements of the basis pontis, middle cerebellar peduncles, corpus callosum, or cerebral hemispheres between MD and the normal controls.

The calcarine sulci and central sulci were significantly dilated, reflecting atrophy of the visual cortex and postcentral cortex, respectively. The lesions located in the calcarine area, cerebellum, and postcentral gyri were related to three characteristic manifestations of this disease, constriction of the visual fields, ataxia, and sensory disturbance, respectively. MR imaging has proved to be useful in evaluating the CNS abnormalities of methylmercury poisoning.

**BIO-PROBE COMMENT:** The utilization of MRI to establish CNS damage from mercury is becoming increasingly popular and may provide a vital diagnostic tool as parameters become more clearly defined.

Histological Changes of Mandibular Condyles in Scrobicul ODs Rats.
Yokoyama, M; Kato, H; Kamiya, M; Ito, N; Kameyama, Y.

**ABSTRACT:** The purpose of the present study was to investigate histologically the changes of the mandibular condyle in osteogenic disorder syndrome (ODS) rats, with a hereditary osteogenic disorder caused by a deficiency of L-gulonolactone oxidase. This rat becomes scrobicul without a supply of ascorbic acid. The trait is autosomal recessive.

The normal rats (+/+), which can synthesize ascorbic acid were used as the controls. Fifty +/+ rats (Group 1), weighing about 80g, and fifty ODS rats (group 2), weighing about the same weight, were kept on an ascorbic-deficient lab chow (CL-2; Clea Japan Inc.). The animals of both groups were killed at 0, 1, 2, 3 and 4 weeks. The mandibular condyles of the animals of both groups were examined histologically. Before sacrifice, blood was collected from all animals and the concentrations of ascorbic acid in the blood were measured.

Histologically, at 0, 1 and 2 weeks, the mandibular condyles of Group 2 were similar to those of Group 1. But, at 3 and 4 weeks, the mandibular condyles of Group 2 were quite different from those of Group 1. The cartilage layer of the condyle was irregularly thinned and partly replaced by the fibrous connective tissue. The cancellous bone was reduced in amount and the bone marrow spaces were replaced by the fibrous connective tissue. The result of the present study indicates that ascorbic acid deficiency produces the marked structural changes of the mandibular condyles in the animals.

**BIO-PROBE COMMENT:** Humans are one of the few animal species that cannot produce their own ascorbic acid (vitamin C).

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**CURRENT WORLD NEWS**

**GERMAN GOVERNMENT ISSUES NEW DIRECTIVE ON AMALGAM**

The following information from "Die Zahnarztwoche 15-16, 1995, 12 April 1995 was translated and provided by Mats Hanson, Ph.D. of Sweden.

BfArM- Documentation
Published below are the additions to the Bundesinstitute for Drugs and Medical Products (BfArM) product information for Amalgam which is to be effective 1 July 1995.

In section "Indications for use":
Amalgam fillings are only allowed for use as occlusal fillings in molars (Class I and II) if other plastic filling materials are contraindicated and other restorative techniques are not applicable. For preventive health protection the number of amalgam fillings for the individual patient should be as few as possible since each amalgam filling contributes to the human mercury load.

In section "Contraindications":
Amalgam is not suitable
- For retrograde root fillings.
- For building up teeth which will have crowns or inlays.
- As a filling material in cast crowns.
- When there will be occlusal or approximal contact with already present cast dental restorations, no amalgam should be placed.

In section "Contraindications":
under "Use during pregnancy and lactation"
Since fetuses will be exposed to mercury from the mother's amalgam fillings, on the basis of preventive health protection, there should be no placement or no additional amalgam fillings placed, respectively, during pregnancy. Alternative materials should, if possible, be the preferred choice.

Since removal of amalgam will cause an additional exposure to mercury, no clinically faultless amalgam restorations should be removed during pregnancy, especially.

According to present knowledge, there is no evidence that the mercury exposure of the fetus from its mother's amalgam fillings causes health effects in the child.

In section "Side Effects":
After the placement or removal of amalgam fillings there might be a temporary increase in the mercury levels in blood and urine. The sentence "The increase is not connected with any risk" should be deleted (from the present edition of the Directives: translators comment).

In section "Methods and durability":
With suitable precautions like the installation of suction equipment, use of a rubber dam, sufficient water spray during removal of amalgam fillings, ventilation of the surgery, careful handling of amalgam scrap etc, the mercury burden of the patient can be reduced.

Current restrictions will remain:
- A strict risk/benefit evaluation for children up to six years of age.
- No amalgam for persons with reduced kidney function.
- No amalgam for mercury-allergic patients.

LIMIT ON AMALGAM FILLINGS
SUGGESTED

In a series of articles appearing in the Calgary Herald Newspaper 15 & 16 March 1995, reporter Mark Lowey reported on new research and a major review of the health risk assessment of amalgam fillings being done by Mark Richardson, Ph.D. of Health Canada’s Environmental Health directorate. In a rather unique and logical approach to the problem of reducing human exposure to mercury vapor from amalgam fillings, Dr. Richardson has suggested that there is enough scientific evidence about the risk of mercury fillings to consider limiting the total number of such fillings that any one person may have in their teeth. Dr Richardson is doing his "risk assessment" review for the Canadian Federal Bureau of Medical Devices which, like the U.S. FDA, has regulatory power to limit the use of certain dental materials. The completed review is due next month and Dr. Richardson has indicated that arriving at a "tolerable" daily exposure to mercury will determine how much of the heavy metal the general population takes in from fillings and what health risk this presents. (A copy of the Calgary Herald Newspaper articles have been enclosed with this issue of Bio-Probe).

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MERCURY USE TO BE BANNED IN ONTARIO, CANADA!

In April of 1995, members of the Ontario Dental Association (ODA) in Canada received a letter from the ODA President which included the following statement: "The Ministry of Environment and Energy has placed mercury on a list of substances scheduled for banning or phasing out. The ODA is closely tracking the MEE's progress and members will continue to be informed each step of the way."

The Ministry of Environment and Energy is a provincial agency in Ontario. Their concern, obviously, would be with mercury in the environment. The effect, however, would be that a ban on the use of mercury would end the use of dental amalgam in Ontario.

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MORE ON DENTAL MERCURY IN WASTEWATER!

The November 1994 issue of "Dental Products Report" contained an article entitled "Concern About Amalgam in Water Fuels Testing in California" (page 29). The article told of comprehensive testing on the effectiveness of amalgam separators by the city of San Bernardino and Loma Linda
University School of Dentistry. Their stated aim is for "eventually preventing dental amalgam from entering municipal waste water."

It was noted that at least six European countries strictly regulate amalgam, disallowing it from entering water supplies. Additional European countries are expected to join Germany, Switzerland, Sweden, Italy, Norway, and Austria during 1995.

The article stated that, although it is considered to be safe and effective in the mouth, amalgam could be a potentially serious environmental problem. Tiny particles of dental amalgam can pass into waste water where they can come into contact with chemicals in sewage, such as household cleaners, producing chemical reactions.

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DENTAL EDUCATION
"BROKEN" OR NOT???

The Institute of Medicine (IOM) of the prestigious National Academy of Sciences (NAS) recently published a comprehensive report on dental education, entitled "Dental Education at the Crossroads: Challenges and Change." The report encourages dental school professors to become more closely aligned with medical schools and other health professionals at universities, particularly with their recommendation of increased emphasis on research that begins with collaboration with the "academic health center" (page 290).

Key statements include: "The accreditation process remains too focused on process and too inhospitable to educational innovation." (In "Accreditation and Licensure", page 292); "Agreement on educational problems is widespread. The curriculum is crowded with redundant or marginally useful material and gives students too little time to consolidate concepts or to develop critical thinking skills. Comprehensive care is more than a reality in clinical education, and instruction still focuses too heavily on procedures rather than on patient care. Linkages between dentistry and medicine are insufficient to prepare students for a future of patients with more medically complex problems and more medically oriented strategies for prevention, diagnosis, and treatment. The basic and clinical sciences do not adequately relate the scientific basis of oral health to clinical practice." (In "The Mission of Education", page 289); and "Politically, much of organized dentistry views distance from health care reform as a way of insulating the profession from demands for change and accountability." (page 286).

Guiding Principles (page 282) include: "Oral health is an integral part of total health, and oral health care is an integral part of comprehensive health care, including primary care."; "Dental education must be scientifically based and undertaken in an environment in which the creation and acquisition of new scientific and clinical knowledge are valued and actively pursued."; and "Learning is a lifelong enterprise for dental professionals that cannot stop with the awarding of a degree or the completion of a residency program." The report also suggests special education in oral medicine, with possibly dual degrees in medicine and dentistry being awarded.

The American Dental Association (ADA) reacted predictably with an editorial by JADA Editor Lawrence H. Meskin, D.D.S. entitled "If It's Not Broken......" (JADA, 126:140-142, Feb 1995), which acknowledged the need for some "fixing" and agreed with some of the proposals in the report but failed to acknowledge the fundamental attitude disparity noted in the quotes contained herein. Copies of the IOM/NAS report are available for $53.95 from the National Academy Press, National Academy of Sciences, 2101 Constitution Ave., NW, Box 285, Washington, DC, 20055.

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IN MEMORIUM

We at Bio-Probe, along with all who knew and loved him, are deeply saddened at the passing of Dr. Gary Strong. After battling serious illness for over ten years with courage and spirit, Gary finally succumbed. Few knew of Gary's trials. None could tell from his demeanor, which was ever positive and confident.

Gary's contribution to the welfare of his fellow man was monumental. His intelligence, fortitude and dedication are an inspiration to all. In his honor, the International Academy of Oral Medicine and Toxicology (IAOMT) annual award for outstanding service has been named "The Gary A. Strong Award."

Gary is survived by his loving wife Pam and three children; Nathan (age 15), Joshua (age 13), and Andrew (age 12). A fund for the education of his children has been established. Contributions in his memory may be sent to: The Gary A. Strong Childrens Education Fund. Norwest Bank. Attn: Jean Sangsrud. P.O. Box 30058. Billings, MT 59117.

Gary inspired by example, through the life he lived and the strength he exhibited. We all hope that we can live up to that example.

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FORUM

IAOMT - 11TH ANNUAL SCIENTIFIC
SYMPOSIUM

Date: 15-17 September 1995.
Hotel: "Hotel Atop the Bellevue," 1415 Chancellor Court, Philadelphia, PA 19102. Room Reservations: $120.00/night. Call (800) 221-0833 [Specify IAOMT]. Airport/Hotel shuttle: $8.00 (one way).
This hotel is located in the center of the upscale Philadelphia historical district and is a member of the elite "Preferred Hotels and Resorts Worldwide." The IAOMT room rate is extraordinary, but a limited number are available at that rate. YOU MUST MAKE RESERVATIONS as early as possible!
REGISTRATION: Dr. Mark A. Breiner. 325 Post Rd., Orange, CT 06477. Tel: (203) 799-6353. $365.00 Members (Includes spouse or 1 staff). $465.00 Non-Members (Includes spouse or 1 staff). Above fee includes lunch for one on Friday & lunch and learn for one on Saturday.

PROGRAM:
- Murray J. Vimy, DMD: "Scientific Update on Dental Amalgam."
- Richard Passwater, Ph.D.: "The Role of Antioxidants in the Prevention and Treatment of Periodontal Disease and Heart Disease."
- Harold Gelb, DMD: "Role of TMJ Disorders in Facial Pain."
- Jerry Bouquot, DDS, MS: "Cause and Effects of N.I.C.O. (Neuralgia-Inducing Cavitationsal Osteonecrosis."
- Robert E. McMahon, DDS: "Hypercoaguability States and Jawbone Necrosis; Diagnostic Anesthesia for Referred Trigeminal Pain."
- Aaron J. Rynd, Ph.D.: "Your Disciplinary Hearing."

WORKSHOPS: This meeting will premiere break-out workshops, to be held at Session II on Friday morning. Three one hour workshops will coincide separately at 2:00, 3:00 and 4:00 pm, providing a choice for attendance.
- Mark A. Breiner, DDS: "Introduction to Electrodermal Screening (EAV): Scientific background and legal status."
- W. Jess Clifford, MS: "Materials Testing."
- David W. Ganong, DMD: "Live Blood Microbiology in Dental Treatment."
- David C. Kennedy, DDS: "Indirect Composites."
- Scott J. Loman, DDS: "The Use of Biocalex in Endodontic Therapy."
- David W. Regiani, DDS: "Low level laser therapy: Dental applications."
- Philip P. Sukel, DDS: "IAOMT Positions/Standards of Care."
- Michael F. Ziff, DDS: "Mercury 101 & 102."

QUEBEC HOLISTIC DENTAL ASSOCIATION
Deuxieme Annual Convention
DATE: Friday and Saturday, 9-10 June 1995.
SITE: Sheraton Inn Laval. 2440 Autoroute des Laurentides, Laval, Quebec, H7T 1X5, Canada. Tel: (514) 687-2440. Fax: (514) 687-0655. Room rate = $84.00/nite single/double.

REGISTRATION: A.M.D.H.Q./The Treasurer. 1570 Henri-Baurassa West, Montreal, QC H3M 3E3, Canada. Fee: Member = $175.00; Non-member = $225.00; Staff with dentist = $50.00/person.

PROGRAM: Amalgam, Fluoride, Non-Surgical Perio.
Saturday, 10 June = "Toxic Free Preventive Dentistry" by Dr. David Kennedy.

MEDICAL RISKS FROM DENTAL MERCURY
AND HOW TO REBUILD YOUR PATIENTS' HEALTH

DATE: Friday and Saturday, 26-27 May 1995.

PROGRAM: Murray J. Vimy, D.M.D. and H.L. "Sam" Queen, C.N.S., C.C.N.

REGISTRATION: Includes conference, hotel room, meals, gratuities, Friday night banquet, and use of fitness center. Individual attendance = $1275 ea; two attendees sharing room = $1125 ea; spouse = $350 [does not include conference attendance, although visits are welcome]; day attendance = $800 [conference attendance only].

RESERVATIONS: Queen and Company Health Communications, Inc. P.O. Box 49308, Colorado Springs, CO 80949-9308. Tel: (719) 598-4968. Fax: (719) 548-1785.

AMERICAN ACADEMY OF HEAD, NECK and FACIAL PAIN
11th Annual International Symposium
DATE: 10-12 August 1995.
SITE: Palm Beach, Florida.

HOTEL: Four Seasons Ocean Grand. 2800 South Ocean Blvd., Palm Beach, FL 33480. Tel: (407) 582-2800/(800) 432-2335. Single/double standard = $110.00; S/D deluxe = $125.00. [Only 125 rooms available; make reservations by 7 July.]

REGISTRATION: Before 10 July [after]: Members = $395.00 [$495.00]; non-members = $495.00 [$595.00]. Cordelia Mason, Executive Secretary. 520 W. Pipeline Rd., Hurst, TX 76053-4924. (800) 322-8651, (817) 282-1501, [Fax] (817) 282-8012.