AMALGAM “COVER UP” EXPOSED IN CANADA!!

“Decouverte” is the French word for “Discovery.” It is the title of a respected news program on the French network of the Canadian Broadcasting Corporation. Decouverte’s mission is to “discover” scientific issues that might be covered up. Last October, Decouverte aired a 16-minute report on the health risks of amalgam following publication of Health Canada’s Position Paper on the issue. The show was so unfavorable to the pro-amalgam position that it elicited public outcry in dental offices everywhere in Quebec. The following week, the Order of Dentists of Quebec published rebuttals in major newspapers across the province to reassure dental patients of the “total safety and biocompatibility” of dental amalgam!

On 23 February, Decouverte aired a second report on amalgam, this time exposing Health Canada’s failure to inform Canadians of the possible dangers of this material. Since 1976, four Health Canada reports by medical scientists have warned of these dangers; only in 1996 did Health Canada publish a position statement on amalgam, recommending dentists limit its use in certain groups of patients.

The program started with host Charles Tisseyre informing viewers that a group of Canadian dental patients had this week announced their intention to file a class action suit against Health Canada, the Canadian Dental Association and amalgam manufacturers for failure to inform them of the possible side effects of amalgams.

Since 1982, according to Canadian law, all medical devices destined to be implanted in the human body for more than 30 days must have pre-market studies done to prove their safety and biocompatibility. The president of the Canadian Dental Association admitted his predecessors and the dental industry had lobbied the government to exclude dental restorative materials “that do not come into contact with blood” from this law. Decouverte obtained information that this was to protect small amalgam manufacturers who did not have the necessary funds to complete these studies.

Dr. Pierre Blais, former risk analyst with Health Canada and author of its 1976 report on amalgam, denounced this lack of quality control saying how “he could manufacture cadmium or other metal filings and sell them as amalgam and it would take months or years before it would be found out.” He shared how the continued use of amalgam was contrary to Health Canada’s policy on mercury hygiene and pollution control: “The Government was concerned over picograms and micrograms of mercury in apples and looked the other way when milligrams, one million times more, were being implanted directly into a child’s mouth.”

When asked why it took 20 years to publish a position paper on amalgam, Richard Tobin, Director of Health Canada’s Medical Devices Bureau, said in interview that he was not aware that Canadians were not informed of the possible dangers of amalgam and that the risk was deemed minimal anyway. Questioned about the Quebec Order of Dentists advertisement claiming “total safety” of amalgam mercury exposure, Dr. Tobin said he was not in agreement with it and he would have to discuss it with the Order. The president of the Quebec Order of Dentists declined invitation to be interviewed and explain his point of view on Decouverte.

Dr. Mark Richardson’s studies on the relative risks of mercury in amalgams and bisphenol-A in composites were quoted: The average Canadian, with 8 amalgams,
was 3.5 times over the daily threshold limit for mercury exposure, whereas the patient with 8 composites was 125 times UNDER the daily threshold limit value for escaping bisphenols-A.

The program concluded with both CDA President, Dr. Barry Dolman, and Dr. Pierre Blais agreeing, in the end, that the dental patient must beware and take responsibility for his/her own health. Health Canada is presently revamping its medical devices policy; there are currently no plans to require pre-market studies for amalgam.

Comment: Richard Tobin of Health Canada was courageous to answer questions from reporter Michel Rochon, but he just did not have the answers! The fact that the Order of Dentists, Quebec's licensing body and government appointed public protector, would not appear on the program was very detrimental to them. Health Canada’s disagreement with their advertisement on the “total safety” of amalgam mercury exposure and their refusal to appear on the show further damaged their rapidly diminishing credibility on the dental amalgam controversy. Signed Pierre Larose

BIO-PROBE COMMENT: We are grateful to Dr. Pierre Larose for providing this timely report on the Decouvert program. The key factor in this important expose’ is the fact that four internal studies by Health Canada scientists were buried. The Medical Devices Act of Canada mandates Health Canada with the “duty to inform”, a duty which was clearly and shamefully ignored. Dr. Pierre Blais, in a memorandum to the Chief of the Division of Medicine for Health Canada on his 1976 study questioning the safety of amalgam mercury, stated: “The potential hazards associated with the amalgam products are so transparently obvious that we cannot even appear to ignore it without attracting ridicule.”

The fact that Health Canada failed to inform the Canadian citizens of these four studies for twenty years demands accountability from the responsible officials. The recommendations of these studies should not have been ignored, in favor of yielding to the influence of the dental establishment, for whatever reason. The first responsibility of the Health Canada officials is supposed to be to the citizens, not to a special interest group. The following article adds further insight to the rapidly developing situation in Canada.

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AMALGAM CLASS ACTION SUIT IN CANADA

On 17 February 1997, two organizations provided press releases announcing a possible class action suit against dental amalgam in Canada. These organizations are “Canadians for Mercury Relief (CFMR)” in Toronto and “Alliance For Public Accountability (AFPA)” in Ottawa.

The CFMR release opened with: “The silver dental fillings that you have been receiving are comprised of fifty percent mercury and have been exposing you to mercury vapor concentrations in your mouth, that in

many cases exceeds the World Health Organization’s Safe Occupational Exposure Limits by as much as 1200%.” The release went on to cite the twenty year old study of Dr. Pierre Blais for Health Canada. A spokes-

person for CFMR emphasized that the purpose of the lawsuit was to educate Canadians and dentists alike as to their options and also the importance of proper procedures for the removal of mercury amalgam fillings.

CFMR has retained the Toronto law firm of Paroian, Raphael, Courcy, Cohen & Houston to take preliminary steps prior to the commencement of a class action lawsuit. The primary thrust of the potential legal action is based on the fact that Health Canada failed in its duty to inform the citizens of Canada of the results of its own internal studies questioning the safety of mercury exposure from dental amalgam fillings.

The AFPA news release expressed full support for the CFMR action and stated: “We believe that it is imperative that their message be heard, as it affects so many Canadians. Citizens have a right to know the potential risks they are taking in using Mercury Amalgam.” The two groups held a joint news conference at the law firm at 10:00 am on Thursday, 20 February 1997.

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AMALGAM BAN DEMANDED IN GERMANY

The following Press Release From Germany has been translated by Mats Hanson, Ph.D. of Sweden.

BUND, Friends of the earth. The Association of Environment and Environmental Protection, Germany. Dunanstrasse 16, D-79110 Freiburg

Freiburg/Bonn, 28 January 1997

Review/Background Information

Presentation of the results of the largest trial on mercury release from dental amalgam fillings in world,

BUND demands:

No respite for amalgam - Amalgam ban overdue.

Amalgam has been the dental filling material of choice since 150 years. The criticism of this debated material has now been further strengthened after the current results of the Tübingen amalgam tests.

The largest test In the world on mercury release from amalgam fillings into the saliva was initiated in summer 1995 by BUND and carried out by the department of environmental analysis at the university of Tübingen. After a few hundred tests at the BUND-Environmental exhibition ÖKO-95 in Ulm had shown a mean of more than four times higher mercury levels in the saliva than the Bundesgesundheitsamt had reported, BUND decided to act because of apparent governmental inactivity. Funded by the MOMO-Children Foundation, we engaged the environmental analytical group at the university of Tübingen for the scientific realization of the largest experiment in the world on mercury release from dental amalgam fillings. The analysis of the data have been completed and sent to the Bundesinstitut für Arzneimittel und Medizinprodukte for publication.
Part 1: Mercury concentration In saliva from amalgam fillings.

In the first part of the study mercury levels in the saliva were measured in 20,000 persons and related to the number of amalgam fillings. The aim was to evaluate whether and to what degree there was an exposure to mercury from amalgam fillings. The second part of the study examined the relation between the levels of mercury in saliva and a special spectrum of symptoms.

Mercury levels strongly elevated.

The more than 4-5 times higher mercury levels in saliva compared to the levels reported by the former Bundesgesundheitsamt in 1984 (now Bundesinstitut für Arzneimittel und Medizinprodukte) caused alarm, both among the public as well as among professionals. The continuation of the analyses were increasingly made more and more difficult for the scientists at the University of Tübingen, a sign of the alarming nature of the results. In addition to a great deal of irrelevant criticism, it was also reported that WHO had distanced itself from interpretations of the Tübingen study, which also proved to be false. Especially the exceeding of the established tolerable limits caused worry: The total tolerable weekly uptake of mercury (including the vapor phase) of WHO was exceeded. About 43% of the test persons had higher, often several fold, exposure than the permissible intake. Since it has already been demonstrated that the mercury in the saliva is dissolved but not particulate, one has to calculate with a much higher absorption and mercury load than previously supposed. Of importance is that in the 20-39 year old group (including women in the fertile ages) the tolerable levels were especially often exceeded. This can be explained by the fact that the number of fillings in this group is especially high with 9-11 fillings, compared to a mean of 8 in the general German population. The tolerable intake was also often exceeded for children with fewer fillings because of their lower body weight.

Mercury load from amalgam fillings.

As a further statistical result the study established that the mercury concentration in saliva (before and after chewing) depends on the number amalgam fillings. The exposure to mercury from amalgam fillings has been scientifically debated. The results from the Tübingen study clearly show an increased mercury load from amalgam fillings.

Saliva test a method to establish the mercury load.

The criticism of the Tübingen amalgam study concentrated on the question whether saliva was a better medium than for instance blood and urine to evaluate mercury exposure. Recent research confirms the advantages of the saliva test. The load on the oral cavity and the gastrointestinal tract can be estimated better with the saliva test than with any other available method. Hg can be present in both the oral cavity and the gastrointestinal tract without being detectable in blood or urine. It is clear that blood and urine do not reflect the Hg-concentration in the oral cavity/upper airways and in the gastrointestinal tract. In addition, it was not possible to obtain a certification/standardization for either blood (Dtsch Ges für Arbeitsmed) or urine (Dtsch Ges für Klin Chem) in the exposure range relevant for amalgam fillings. In contrast, a standardization test by the State Medical Dept of Stuttgart confirmed the excellent reproducibility for the saliva test; laboratories which processed the samples with the same method obtained consistent results; the standard error between the 10 laboratories was less than 15%.

Part 2. Measured levels In saliva and disease symptoms.

Every saliva test was accompanied by a questionnaire in which the persons were asked for 30 symptoms. The analytical group at Tübingen University evaluated 17500 completely answered questionnaires. The question was whether there was a significant relation between report of a symptom and the measured level of Hg in the saliva after chewing.

It has to be stressed that the established relation has a direct mathematical and statistical character and should not be casually interpreted. A statistically significant difference does not automatically mean a medical or biological relevance. Not even multi variance analysis can decide which relations are caused by chance and which by a casual relation.

Relation between symptoms and mercury concentrations in saliva after chewing.

The Tübingen amalgam study could establish in the especially examined group of 21-40 year old persons a statistically significant relation between mercury levels in saliva and symptoms. Only symptoms which are characteristic of subacute or chronic mercury exposure in the low-level range were studied.

The set of symptoms are often called micromercurialism in the literature.

There was a significant relation between the measured mercury concentration and the following symptoms:

1. Mouth-oral cavity: Bleeding gingiva, metal taste, burning tongue.

2. Central nervous system: Concentration difficulties, impaired memory, sleep disturbances, lack of initiative, nervousness.

3. Gastrointestinal tract: not specified; further research is needed to establish the diseases which are covered by the non-specific label gastrointestinal problems.

Plausibility and explainability of the demonstrated symptoms.

In addition to high levels of mercury in saliva there has also been demonstrated high levels in gingiva, pulp, oral mucosa, dentine, roots and jaw bone. Amalgam fillings, as described in the literature, lead to increased inflammation of the gingiva. In addition the oral cavity will be affected by the Hg-vapor released by the fillings. Experiments with cell cultures demonstrated that the Hg-
levels measured in the oral tissues (up to 8000 ng/g in the mucosa) can lead to damage to human cells. It has also been described that unpolished amalgam fillings can damage nearby cells more than polished ones.

Also for the gastrointestinal tract it has been demonstrated that there are high levels of mercury in the intestinal wall, intestinal lymph nodes and in feces. The cause of this is that the mercury which is swallowed with the saliva is only absorbed to 10% and the rest remains in the gastrointestinal tract.

For both these body parts it has been established that blood and urine levels are unsuitable to evaluate the mercury load. The symptoms from the central nervous system show a remarkable similarity with the classical mercury symptoms described in the literature. For instance, effects of mercury on memory and concentration has been repeatedly described in the literature.

The Tübingen group for environmental analysis stress that some aspects of the study require further examination. For instance, the relationships between mercury exposure to metal allergy, or loss of hair, or the relationship to involuntary infertility. In each of these considerations, tendencies were noted, however, extensive and expensive further questionnaires are required. It should be stressed that the results are statistical and do not establish a causal relation for single cases for any symptom.

After the statistical relations found in the study, persons who complain over problems with amalgam must not further be dismissed a "Ecochondriae" or Hypochondriae,” and furthermore a possible Hg-load must be taken into account in the anamnesis, especially when the patients exhibit the described symptomatology.

Amalgam is with certainty not the material for the future, the Tübingen group stress, however they also warn for exaggerated panic reactions. As in medicine In general, in every single case one must together with the treating doctor evaluate whether an amalgam removal is necessary and if yes, how rapidly a removal should take place.

The relations found, which as stated above, should not be causally interpreted, however clearly prove that humans will be exposed to a continuous load of mercury from amalgam fillings. The filling material amalgam is thus suspected of being able to cause damage to health.

This should be sufficient for health policy measures and at last start to end the amalgam era.

Demands by BUND as a consequence of the amalgam study:

- BUND demands that minister of health, Seehofer, immediately acts on the basis that: Amalgam, as an additional risk factor, does not belong in the oral cavity.

- The amalgam ban should not only be restricted to pregnant women and children but should immediately be general for dentistry.

- The university dental clinics must immediately re-

move the technique of amalgam placement from their educational agenda, as has already happened in renowned dental clinics in Switzerland.

- Teaching and education on amalgam problems, safer removal techniques for amalgam filling and on plastic alternatives for molar teeth.

- Further studies are indicated by the amalgam study. The Minister of Health Seehofer must not further burden environmental organizations with the expenses.

- BUND demands that the Minister of Health release funds for follow-up studies at the University of Tübingen.

- After an overdue amalgam ban the costs for alternative materials must be taken over by the insurance system.

Dental metal test can be mediated by all pharmacies. BUND can, in cooperation with the environmental analytical group at Tübingen, offer under the name SALYAMAG a dental metal test. This can be mediated by all pharmacies. In addition to mercury levels in saliva all other dental metal are analyzed. Further information in all pharmacies and from BUND-Umweltlabor, Tel: 0781/9383-21, Fax-11

For answers to scientific matters please contact Dr E Roller, Dr. HD Wolss, KH Maier, AK Umweltanalytik, Univ. of Tübingen, Postfach 210352, D-72026 Tübingen, tel 07071/2984802. Interested journalists can obtain detailed information from BUND, Dunanstrasse 16. D-79110 Freiburg, Tel: 0761/885955-0, Fax-90

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ACTIVITY IN IOWA
ON DENTAL AMALGAM!

What does it take to convince state authorities that the Dental Boards are wrong in attacking mercury-free dentists and are abrogating their responsibility to the public health? It takes a combination of valid science + concerned citizens + sound legal assistance (media attention also helps). This combination is making headway in the State of Iowa!

The Board of Dentistry (BOD) in Iowa has been especially active in attacking opponents of dental mercury. Several dentists have already been disciplined. In addition, the Iowa BOD actually incorporated into the Iowa Dental Regulations the American Dental Association’s (ADA) 1987 alteration of its Code of Ethics regarding the conduct of dentists on dental mercury.

In response, a number of concerned Iowa citizens formed Iowa Dental Awareness (IDA)” to begin actively appraising the authorities in the state of the actions of the Iowa BOD. They enlisted the support of recently formed “Consumer Dental Choice Project (CDCP),” headed by attorneys from the Swankin & Turner law firm in Washington, D.C. IDA members actively lobbied numerous state officials, especially legislators, and provided them with pertinent scientific documentation and their own case histories. IDA provides weekly one page information sheets to every State Legislator.
Attorney Charlie Brown, of Swankin & Turner, twice traveled to Iowa to meet with key state officials; including the Attorney General, his Anti-Trust Attorney, the Governor's Legal Aide, the Legal Aide to the State Legislature, and the Board of Dentistry itself. His thrust has been to point out the violations of state and federal laws by the Iowa BOD, especially those dealing with anti-trust, freedom of speech, and restraint of trade. He has also called for repeal of the State Regulation that was based on the ADA position, a public declaration of neutrality on the amalgam mercury controversy from the Iowa BOD, and a requirement that Iowa citizens be informed of the published science questioning the safety of amalgam mercury.

In their meetings with state officials, the IDA was requested to establish a compromise position on their demands, which they did. The compromise, fundamentally, asked the BOD to cease its attacks on mercury-free dentists and to ensure that the citizens of Iowa were adequately informed. The Iowa BOD addressed the issue at its meeting on 16 January 1997, but was clearly hostile to the IDA requests. The meeting was well attended by citizens, government officials, and the media. On 4 February 1997, the IDA filed a petition prepared by the CDCP legal team, which compels the BOD to respond within 60 days. Clearly, the Iowa BOD has its back up against the wall, as all eyes in the State are upon it.

If some success can be achieved in Iowa, following on the heels of the BOD dismissal of the attack on Dr. Ed Arana, the message may spread to other State Dental Boards. A few concerned and dedicated citizens can make a difference! To support this vital initiative, your tax-deductible contribution can be sent to: Consumer Dental Choice Project, 1424 16th St., NW, Suite 105, Washington, DC 20036 Iowa, or Dental Awareness, 3720 River Road, Osage, IA 50461-8003.

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ACADEMIC FREEDOM REJECTED IN NEW MEXICO!

Readers are reminded of previous articles reporting the dismissal of Dr. Dennis Lobstein as Director of the Total Health and Wellness Program (THAW) of New Mexico Highlands University. The dismissal of Dr. Lobstein, the founder of the program, was precipitated by complaints from local dentists for his articles reporting the research questioning the safety of mercury dental fillings.

Strong support from students, faculty members, and many others came to no avail. Dr. Lobstein filed a grievance with the University but, in a three to two decision, the Hearing Board ruled that his academic freedom rights were not violated. In an extremely confusing and contradictory manner, the Hearing Board also "concluded that the events which led to change in directorship and the manner in which the change occurred raise serious concerns" and stated these concerns as: "A. The triggering event (i.e., the complaint of a local den-
tist) and the administration's disproportionate response convey the impression that the administration will abandon faculty at the first hint of controversy; B. The linkage between the change in directorship and Dr. Lobstein's articles in the THAW newsletter proclaims an insensitivity to and disregard for the spirit of academic freedom; and C. The Board finds that the administration's understanding of academic freedom, as expressed by the Vice President for Academic Affairs during the hearing, is unacceptable. His delineation of the nature of academic freedom had so many broad exceptions as to render academic freedom meaningless. Further, his definition is inconsistent with academic tradition and invites arbitrary and capricious application."

In view of these formally stated concerns, one must wonder how the Board managed to rule against Dr. Lobstein. Indeed, a minority report was filed. The American Civil Liberties Union (ACLU) has agreed to represent Dr. Lobstein in further action.

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BIOCOMPATIBILITY OF DENTAL COMPOSITES FORMALLY ADDRESSED

A risk assessment medical scientist has completed a formal investigation of the biocompatibility of dental composites. This investigation, sponsored by the International Academy of Oral Medicine and Toxicology (IAOMT), is vital and long needed, as there exists little formal documentation to support existing opinions. The study quantifies exposure to components and degradation products of composite resin dental materials and has now been accepted for publication in a peer reviewed science journal. Publication should be within the next three months and the study will be immediately reported in this newsletter.

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SCIENCE

Mercury Vapor Inhalation Inhibits Binding of GTP to Tubulin in Rat Brain: Similarity to a Molecular Lesion in Alzheimer Diseased Brain.

Pendergrass, JC; Haley, BE; Viny, MJ; Winfield, SA; Lorscheider, FL.


KEY WORDS: Mercury toxicity - Dental amalgam - Neuron microtubules.

ABSTRACT: Hg2+ interacts with brain tubulin and disassembles microtubules that maintain neurite structure. Since it is well known that Hg vapor (Hg0) is continuously released from "silver" amalgam tooth fillings and is absorbed into brain, rats were exposed to Hg0 4 h/day for 0, 2, 7, 14 and 28 d at 250 or 300 ng Hg/m3 air, concentrations present in mouth air of some humans with many amalgam fillings.

Average rat brain Hg concentrations increased significantly (1-47 fold) with duration of Hg0 exposure. By 14 d Hg0 exposure, photoaffinity labeling of the beta-subunit of the tubulin dimer with [alpha32P]8N3GTP in brain homogenates was decreased 41-74%, upon analy-
sis of SDS-PAGE autoradiograms. The identical neurochemical lesion of similar or greater magnitude is evident in Alzheimer brain homogenates from approximately 80% of patients, when compared to human age-matched neurological controls.

Total tubulin protein levels remained relatively unchanged between HgO exposed rat brains and controls, and between Alzheimer brains and controls. Since the rate of tubulin polymerization is dependent upon binding of GTP to tubulin dimers, we conclude that chronic inhalation of low-level HgO can inhibit polymerization of brain tubulin essential for formation of microtubules.

BIO-PROBE COMMENT: This is the latest in a series of published studies, conducted by medical research scientists at the University of Kentucky and the University of Calgary, on the relationship between neurologic damage caused by mercury and that found in Alzheimer’s Disease (AD). It was first discovered that human AD victims had elevated levels of mercury in the brain compared to controls, especially in areas of the brain where AD damage was prevalent. Then an animal study was conducted showing that toxic mercury exposure caused the same type of neurologic damage as is found in human AD victims. Next, the same results were found when animals were fed mercurolic chloride in drinking water. Finally, the present study showed that worse damage occurred when the animals were exposed to mercury vapor, the primary type of exposure from amalgam dental fillings. This study also adds further evidence that chronic exposure to mercury vapor results in a strong accumulation of mercury in brain tissue, and that this accumulation increases with time.

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A Monte Carlo Assessment of Mercury Exposure and Risks from Dental Amalgam.
Richardson, GM; Allan, M.


ABSTRACT: Dental amalgam is approximately 50% mercury (Hg) by weight, and persons bearing amalgam fillings are exposed to this element, primarily as Hg vapor. For Canadians with amalgam-filled teeth, it was estimated, based on two independent models, that Hg exposure from amalgam averaged: 0.045 to 0.082 ug/kg bw/day in toddlers (aged 3 to 4 years); 0.044 to 0.069 ug/kg bw/day in children (aged 5 to 11 years); 0.034 to 0.044 ug/kg bw/day in teens (aged 12 to 19 years); 0.050 to 0.055 ug/kg bw/day in adults (aged 20 to 59 years); and 0.031 to 0.041 ug/kg bw/day in seniors (aged 60+ years). Amalgam was estimated to contribute, on average, 50% of total Hg exposure from all sources (amalgam, air, water, food, soil) in adults, and 32 to 42% for other age groups.

Numerous studies have consistently reported effects on the central nervous system (CNS) in persons occupationally exposed to Hg vapor. Most such studies have failed to detect a threshold for the CNS effects measured. A Tolerable Daily Intake (TDI) of 0.014 ug Hg/kg body weight/day (as an absorbed dose) was proposed for inhalation of mercury vapor, the principal form of Hg to which bearers of amalgam fillings are exposed. This TDI was based on a published account of subclinical (i.e., not resulting in overt symptoms or medical care) CNS effects in occupationally-exposed men, expressed as slight tremor of the forearm, and should also protect against cognitive function impairment.

Based on the least conservative exposure model of the two independent models developed, the average numbers of amalgam-filled teeth estimated not to compromise the TDI were: 1 filling in toddlers; 1 filling in children; 3 fillings in teens; and 4 fillings in adults and seniors.

BIO-PROBE COMMENT: Readers will recognize the data from this study as those presented to Health Canada in 1995. Dr. Richardson, at the time a risk assessment scientist with Health Canada, had been directed to perform a risk assessment of public exposure to amalgam-derived mercury vapor. His report received such opposition from the dental establishment that Health Canada did not act on the findings of its own specialist. Now the study has been published in a respected peer-reviewed risk assessment journal, and can be appropriately cited as a valid reference. It should also be emphasized that, according to validly published studies, no toxic threshold for the CNS effects of exposure to mercury vapor have ever been found!

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Release of Estrogenic Component Bisphenol-A not Detected from Fissure Sealants In Vitro.
Hamid, A; Hume, WR.


ABSTRACT: A recent study reported that an estrogenic chemical, bisphenol-A, was released from a fissure sealant (Olea et al., Environmental Health Perspectives, 104:295, 1996). Our aim was to identify and quantify any components released from seven light-cured fissure sealants in vitro. Cylindrical stainless steel molds 6 mm in diameter and of defined depth (2.0, 1.0 or 0.5 mm) were filled with sealants (Concise, 3M; UltraSeal, Ultradent; Pit and Fissure Sealant, Bisco; Prisma Shield, Caulk; Helioseal F, Vivadent; Delton, Ash; Delton, Johnson & Johnson) which were light activated and immersed in separate containers of filtered and purified water. The fissure systems of 10 extracted third molars were filled with sealant (Concise, 3M), light activated and immersed. Each tooth or mold with sealant was moved to a new container of water over time (4.32, 14.4, 43.2, 144 & 432 min; 1, 3 & 10 days) and each remaining water sample (eluate) analyzed by HPLC.

A major peak corresponding in elution time to the known component triethylene glycol dimethacrylate (TEGDMA) was detected in all eluates tested. The test addition of TEGDMA to these eluates augmented the magnitude of the single peak (at 2.05 min elution time), while the test addition of bisphenol-A created a second, separate peak (at 1.85 min elution time), confirming the identity of the major peak as TEGDMA. No peak corresponding to bisphenol-A was present in any eluate. TEGDMA was released immediately after sealant place-
ment. The highest mean release rate was in the first sample period for all samples and declined thereafter. The cumulative TEGDMA release was significantly (ANOVA, p) higher for Concise sealant for 2.0 mm molds. There was a significantly (ANOVA, P) direct relationship between mold thickness in cumulative release for Concise and UltraSeal. Bis-GMA was detected in eluates from molds with Concise sealant only.

Of particular relevance was that in the present study the estrogenic chemical bisphenol-A could not be detected in eluates from any of the sealants tested. Our observations call into question recent concerns expressed about the safety of sealant use and the potential estrogenicity of sealants (Olea et al., 1996).

BIO-PROBE COMMENT: Another controversy surfaces within the dental profession. Obviously, differing investigative methodology will provide differing results. For example, in the referenced Olea et al., 1996 study, the investigation of component release from composite restorative material was determined by heating the composites to 100 degrees C. For 30 minutes, followed by immersion in an alkaline medium of pH13 or an acidic medium of pH1 [see Bio-probe Newsletter, 12(6):4-5, Nov 1996]. It is likely that any dental material would break down under those severe exposures, which would never be encountered in actual use. As with all scientific investigative endeavors, future research will clarify the emerging controversy over bisphenol-A initiated by the Olea group.

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CaOH2 Penetration into Dentinal Tubules Relating to the Intracanal Dressing Application Time.

Lage-Marques, JL; Simoes, W; Boldrini, E; Salazar-Silva, JR.

ABSTRACT: The purpose of this study was to compare the calcium hydroxide penetration when it is used in the paste form as an intracanal dressing, with respect to application time. For this purpose twenty eight single root teeth were prepared and dressed with a paste prepared by mixing calcium hydroxide powder and local anesthetic saturated with methylene blue dye solution. The specimens were randomly divided into four equal groups which the experimental times were: Group I - 24 hours; group II - 7 days; group III - 14 days and group IV - 14 days when after 7 days the intracanal dressing was repeated preceded by a re-instrumentation using EDTA 17% as irrigating agent. After the paste has been removed, the specimens were subjected to transversal cuts in their cervical, middle and apical thirds. The dye penetration was analyzed by using a Profile projector.

The results showed that the 14 days experimental time (groups III and IV), afford a deeper and more homogeneous calcium hydroxide penetration into the dentinal tubules relating to the other groups, this difference was not significant as tested by ANOVA. Nevertheless in group IV (14 days with re-instrumentation), the apical third seems to be more permeative showing a significant increase to the calcium hydroxide penetration even when compared to group III (p) as tested by ANOVA. These data indicate that 14 days of the intracanal dressing application promotes higher diffusion of calcium hydroxide through dentinal tubules when used with EDTA 17% as irrigant agent.

In Vitro Determination of Direct Antimicrobial Effect of Calcium Hydroxide.

Estrella, C; Pimenta, F; Ito, I; Loesche, W; Bannmann, LL.

ABSTRACT: The presence and activities of facultative and anaerobic bacteria play a decisive role in the development of pathological alterations in root canals and the periapical area. The purpose of this study was to determine the direct antimicrobial potential of calcium hydroxide, using an In Vitro model of study. A panel of microorganisms, e.g., M. Luteus (ATCC 9341), S. Aureus (ATCC 6538), Streptococcus sp., E. Coli, P. Aeruginosa (ATCC 27853) and F. Nucleatum (ATCC 25856), in pure cultures or in associations, were investigated with regards to their susceptibility to the intra canal dressing mentioned above; the microbial associations used were mixtures I (M. Luteus + E. Coli +P. Aeruginosa), II (M. Luteus + Streptococcus sp. + S. Aureus), III (E. Coli + P. Aeruginosa) and IV (S. Aureus + P. Aeruginosa).

Experiments were carried out in 10 ml of BHI and on the surface of BHIA, with the exception of F. Nucleatum which was assayed in BHI-PRAS. Paper points were contaminated with standard pure and mixed bacterial suspensions, and, subsequently, they were exposed to calcium hydroxide paste for 0, 1, 2, 6, 12, 24, 48, 72 hours and 7 days. The paper points were placed in appropriate media and checked for growth, following aerobic or anaerobic incubations at 37 degrees C for 48 hours.

The antimicrobial effect of calcium hydroxide was shown to occur after 12 hours with M. Luteus and F. Nucleatum, 24 hours with Streptococcus sp., 48 hours with E. Coli and 72 hours with S. Aureus and P. Aeruginosa. The mixture II was sensitive to calcium hydroxide antimicrobial potential after 48 hours, while mixtures I, III and IV were inactivated following 72 hours of exposure. These results indicate that calcium hydroxide has antimicrobial effect which is required for an intracanal dressing.

BIO-PROBE COMMENT: These two studies are further confirmation that calcium hydroxide is a good antimicrobial agent for endodontic use and, further, it will penetrate dentinal tubules. Previously published research has demonstrated that heavy calcium oxide, which combines with water to form calcium hydroxide, is an even better antimicrobial agent and, because of its hydrophilic property, provides better penetration of dentinal tubules. The first study demonstrates the efficacy of irrigation with EDTA in order to remove the smear layer created from endodontic filing and open the dentinal tubules for better penetration. The contribution of
devital dentinal tubules to post-endodontic chronic inflammation is well established. At present, sufficient scientific documentation exists to fully encourage the dental profession to use heavy calcium oxide, or at least calcium hydroxide routinely in endodontic therapy.

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Elimination of Aerosols During Air Abrasive Cavity Preparation Procedures.

Hall, MW; Palmer, TM; Rawlings, DR; Ploeger, BJ; Christensen, R.

ABSTRACT: Dental operatory air may have high concentrations of undesired particles that may affect the health of clinicians as well as patients. The purpose of this study was to determine if air purifiers with different designs can significantly reduce aerosols in operatory air. Extracted human teeth mounted in a mannequin were treated using an ALO, air abrasion device in an 8' x 10' x 8' operatory under the following 3 conditions: (1) No High Velocity Evacuation (HVE) or air purifier present (control #1); (2) HVE only (control #2); and (3) HVE & one of six different air purification devices. Air was sampled at 5 locations around head before, during and 5 & 10 minutes after cutting teeth. Background air particle counts from 4 dental sites (before morning treatment started) and from one complex of business offices were sampled and averaged 36,000 particles/ltr (= 1 un). Data were analyzed using AOV with appropriate t tests and means adjusted for other positions and operators (a =0.05).

Results: Mean Number of Particles Per Cubic Foot (n =10).

<table>
<thead>
<tr>
<th>TEST CONDITION</th>
<th>5 Min After 10 Min After Cutting</th>
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<tbody>
<tr>
<td></td>
<td>cutting</td>
</tr>
<tr>
<td>HVE &amp; ClestraClean APS 625</td>
<td>9,630</td>
</tr>
<tr>
<td>HVE &amp; Heavenance 2000</td>
<td>42,630</td>
</tr>
<tr>
<td>HVE &amp; DentAirVac III</td>
<td>133,170</td>
</tr>
<tr>
<td>HVE Only (Control #2)</td>
<td>211,830</td>
</tr>
<tr>
<td>HVE &amp; Eagle</td>
<td>264,369</td>
</tr>
<tr>
<td>HVE &amp; MedAir ICS 9400</td>
<td>271,290</td>
</tr>
<tr>
<td>HVE &amp; Ultraviolet Air Sterilight</td>
<td>246,210</td>
</tr>
<tr>
<td>No HVE or Air Purifier (Control #1)</td>
<td>133,700</td>
</tr>
</tbody>
</table>

“Before Cutting” air particle counts for each test condition were statistically equivalent. “During Cutting” air particles were 17.5 times greater without HVE than with HVE & air purifier. When averaging “5 & 10 min After Cutting” data, ClestraClean APS 625 reduced air particle counts below background levels to 7500 particles/ltr.

CONCLUSIONS: Air purification devices reduce dental operatory aerosols significantly during and after treatment. ClestraClean APS 625 or Heavenance 2000 used with HVE provided best elimination of aerosols.

BIO-PROBE COMMENT: The problem of operatory aerosols resulting from dental treatment is receiving increasing attention worldwide. Bio-Probe is aware of an European study of the amounts of particulate and mercury vapor generated from the grinding of dental amalgam utilizing the isolate attachment “Clean-Up” compared to conventional HVE. This study will be published soon and will be reported in this newsletter.

FORUM

IAOMT 1997 SPRING SYMPOSIUM
DATE: Friday-Sunday, 14-16 March 1997.
SITE: Louisville, Kentucky.


HOST/MEETING REGISTRATION: IAOMT Spring Symposium, c/o Dr. Jack C. Kall. 2323 Lime Kiln Lane, Louisville, KY 40222. T: 502-423-0781. Meeting registration includes spouse or one staff member, as well as Friday and Saturday lunches. Pre-registration by 14 February 1997: IAOMT members = $345; non-members = $445; additional office auxiliary = $150. Registration after 14 February 1997: IAOMT members = $395; non-members = $495.

PROGRAM:

☐ James C. Pendergrass, Ph.D. - “Effects of Heavy Metals on Brain Proteins.”
☐ Murray J. Vimy, D.M.D. - “Dental Amalgam Mercury Science Update.”
☐ Trevor Lyons, D.D.S. - “Microbiology in the Diagnosis of Oral Disease.”
☐ Dan Watt, D.D.S. - “Conservative Anti-Infecive Periodontal Therapy.”
☐ Bernard Schechter, D.D.S. - “Natural, Botanical Remedies for Non-Surgical Periodontics.”
☐ Phyllis J. Mullenix, Ph.D. - “Fluoride Alters Brain Function.”

IAOMT Workshops will be held on Friday afternoon, with attendees having a choice of workshops:


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