BIO-PROBE

NEWSLETTER

Volume 7 May 1991 Issue 3

DAILY INTAKE OF MERCURY
W.H.O. SCIENTISTS DISAGREE WITH DENTISTS

The World Health Organization has just released its new document on environmental mercury (Environmental Health Criteria 118: Inorganic Mercury. World Health Organization, Geneva, 1991). The W.H.O. committee, consisting of the world’s foremost authorities on mercury toxicology, evaluated the scientific evidence and arrived at various conclusions. For the first time, patient exposure to mercury from dental amalgam fillings was included. The experts reviewed all valid scientific literature and compiled the most authoritative conclusions published to date. They stated: "The general population is primarily exposed to mercury through the diet and dental amalgam." Their determinations regarding human daily retained intake of mercury from various sources are:

DENTAL AMALGAM = 3.0-17.0 mcg/day (mercury vapor)
FISH & SEAFOOD = 2.3 mcg/day (methylmercury)
OTHER FOOD = 0.3 mcg/day (inorganic mercury)
AIR & WATER = Negligible traces.

The Committee also noted that for mercury vapor "a specific no-observed-effect level (NOEL) cannot be established", meaning that no level of exposure to mercury vapor that can be considered harmless has been found. They also stated: "There are at present no suitable indicator media that will reflect concentrations of inorganic mercury in the critical organs, the brain or kidney, under different exposure situations. This is to be expected in view of the complicated pattern of metabolism for different mercury compounds. One important consequence is that concentrations of mercury in urine or blood may be low quite soon after exposure has ceased, despite the fact that concentrations in the critical organs may still be high." This, of course, further establishes that measurements of mercury in blood or urine are not valid parameters for evaluation of the body burden or toxic effects of mercury.

It is notable that the conclusions of the W.H.O. expert toxicologists differ markedly from the opinions stated in the dental literature. Calculations by such dentists as Drs. J.R. Mackert, M. Bergman, A. Berglund, and S. Olsson determined the daily intake of mercury from dental amalgam fillings to be 1.2-1.7 micrograms/day. These dentists further stated that said mercury intake is negligible compared to human intake of mercury from the diet. One must wonder why the conclusions of dentists differ so markedly from those of the expert mercury toxicologists.
The dental authors have further declared that methylmercury derived from the diet is far more toxic than mercury vapor from dental amalgam fillings. Once again, this opinion is contrary to the conclusions of expert scientists, in this case the National Academy of Science. The N.A.S. document "An Assessment of Mercury in the Environment" was prepared by the panel on mercury of the Coordinating Committee for Scientific and Technical Assessments of Environmental Pollutants and was published in 1978. This expert group of scientists evaluated the scientific literature and found that fish that contained mercury also contained even higher levels of selenium. They cited 32 studies demonstrating the protective effects of selenium against mercury poisoning and concluded "methylmercury derived from fish is not as toxic as that from other sources."

Once again, dental authors are publishing opinions widely divergent from those of expert mercury scientists. The public opinions of these dental authors not only have a prominent influence on the public health, but a significant bearing on the credibility of the dental profession.

The evaluation of daily intake of mercury, and its physiologic effects, is complicated. Another factor that has not been considered is intake of amalgam-derived mercury from entry routes other than the oral inhalation of mercury vapor. The recent University of Calgary research has demonstrated that absorption of amalgam-derived mercury through the tissues of the oral cavity and the gastrointestinal tract may be significant. This must be added to estimates concluded only from the oral inhalation of mercury vapor. Another consideration is the rate of elimination of mercury from the human body. The elimination half-time of one dose of mercury has been determined to be about 60 days. Subjects with amalgam fillings are exposed to thousands of doses each day.

**WHO IS CORRECT - DENTISTS OR SCIENTISTS?**

The record established by the dental profession on the dental amalgam mercury controversy is not admirable, to say the least.

For many years, dental authorities stoutly maintained that mercury was "locked" into mixed dental amalgam, even though this position was contradicted by scientific documentation and even information found in standard dental textbooks. When finally obliged to recant that position, dental experts then declared that patient exposure to mercury from dental amalgam fillings was infinitesimal compared to dietary intake of mercury. This position is now contradicted by conclusions drawn by medical scientists of the highest order.

At this point, one must seriously question the qualifications of dental "experts" in evaluating the physiologic consequences of patient exposure to dental amalgam mercury. These dental "experts", who have already been proven wrong in the past, are now claiming that there are no harmful effects to the mercury exposure from dental amalgam. These dental authorities have now begun publishing studies on pathophysiology in dental journals. These studies, naturally, conclude that there are no harmful effects to patients from dental amalgam mercury exposure. Examples of these recently published efforts are those by Dr. J. R. Mackert in the Journal of the American Dental Association and Dr. M. Molin in the Swedish Dental Journal.

Research studies investigating medical physiologic effects, if conducted by dentists should include medical scientists or at least should be reviewed by qualified medical scientists prior to publication (as was done by the Calgary research team). Perhaps the dentists who are now judging medical conditions are also venturing beyond the scope of their qualifications, scientifically if not legally.

It has now been scientifically established that patients are chronically exposed to mercury from dental amalgam fillings and that the exposure is not insignificant compared to dietary intake of mercury. The valid investigation of possible pathophysiologic effects of this exposure will now be determined by qualified medical scientists, not dentists. Information reported later in this newsletter on the latest data connecting mercury to Alzheimer's Disease emphasizes the widening schism between findings reported by medical scientists versus those reported by dentists.
Let us hope that the dental profession realizes its rapidly deepening dilemma before it is too late. Another error in judgement on the part of the dental profession could do irrevocable harm to its credibility with the medical scientific community and with the public.

**MERCUY AND ALZHEIMER’S DISEASE (AD)!!!
"THESE RESULTS SUGGEST THAT CERTAIN COMPLEXED FORMS OF Hg²⁺ MUST BE CONSIDERED AS A POTENTIAL SOURCE FOR THE ETIOLOGY OF AD."

For a number of years a medical research team at the University of Kentucky in Lexington, Kentucky has been investigating Alzheimer’s Disease (AD). These medical scientists are in the Departments of Chemistry, Pathology, and Neurology and the Sanders-Brown Center on Aging.

The first studies by this group were published in 1986 and 1987. (Ehmann, WD; et al. Neurotoxicology. 7:197-206. 1986 -and- Ehmann, WD; et al. Biol Trace Elem Res. 13:19-33. 1987.) Utilizing Instrumental Neutron Activation Analysis (INAA), the team determined quantities of 18 elements in AD brains and age-matched controls. They found that the most consistent alterations of the largest magnitudes were elevations of mercury (Hg) and bromine (Br) and depletions of rubidium (Rb).

The team has continued its investigation, particularly directed to subcellular concentrations and pathophysiologic effects, and have recently published their latest findings. (Abstracts follow in this issue of BPNL.)

After finding significantly elevated levels of mercury in the bulk brain tissue of Alzheimer’s victims compared to controls in the earlier studies, they have now identified the localized elevations and have begun investigation of potential harmful effects related to findings in Alzheimer’s Disease. The team has already identified one pathologic connection of mercury to AD and has noted dental amalgam fillings as one potential source of the elevated mercury found in the brain tissue of AD victims.

The scientific documentation provided by the University of Kentucky medical research team is compelling evidence of possible implication of mercury exposure in the development of Alzheimer’s Disease. Further, this research was evaluated by other medical scientists and published in respected medical journals. This is in stark contrast to investigations of potential medical effects of mercury exposure conducted by dentists, reviewed by dentists, and published in trade dental journals.

*******

**SCIENTIFIC REVIEW**

Wenstrup, D; Ehmann, WD; Markesbery, WR.
Trace Element Imbalances in Isolated Subcellular Fractions of Alzheimer’s Disease Brains.

**PROTOCOL:** Brains from 10 autopsied AD patients (ages 59-93) and 12 controls (ages 59-83) were analyzed for concentrations of 13 trace elements (Ag, Br, Co, Cr, Cs, Fe, Hg, K, Na, Rb, Sc, Se, Zn) by Instrumental Neutron Activation Analysis (INAA). All AD patients met the criteria for the histopathologic diagnosis of AD established by the NIA-NINCDS Study Group.

**RESULTS:** Significant imbalances found were - elevated Hg in AD microsomal fractions; elevated Br mean values in AD whole brain fractions; diminished Se in AD microsomal fractions; diminished Zn in AD nuclear fractions; and reduced Rb in AD whole brain tissue, nuclear fractions and microsomal fractions. Significant alterations in element ratios were - increased Hg/Se mass ratio in AD nuclear and microsomal fractions; increased Hg/Zn mass ratio in AD microsomal fractions; and increased Zn/Se mass ratio in AD mitochondrial fractions.

**DISCUSSION:** "The present study suggests that the elevation of Hg in AD is the most important of the imbalances we have observed." The authors’ previous studies demonstrated a significant increase of Hg in AD bulk brain samples (especially the cerebral cortex) compared to age-matched controls (31.4 vs. 17.5 ng/g, fresh weight basis). They further had found that the largest trace element imbalance ever found was
the elevation of Hg in the nucleus basalis of Meynert (nbM) of AD patients compared to controls (39.3 vs. 8.9 ng/g, fresh weight basis). The nbM is the major cholinergic projection to the cerebral cortex and is severely degenerated in AD victims.

The altered Hg/Se and Hg/Zn ratios were also of special interest as both Se and Zn are known to have a protective role against Hg toxicity in biological tissue. The findings suggest that Se and Zn are utilized in attempting to detoxify Hg in AD brain tissue.

The authors discussed several mechanisms by which the imbalance of Hg might alter the brain in AD victims: 1. A decrease in protein synthesis and RNA and DNA levels, as demonstrated in animal studies. The significant elevation of Hg found in the microsomal fraction in AD could cause inhibition of protein synthesis and be a specific cause of neuronal degeneration and death in AD. 2. Hg binds to tubulin. (See following abstract.) Excess Hg in AD could interfere with the normal assembly of microtubules and be related to cytoskeletal abnormalities in AD. 3. Alteration of cell membranes. Hg has been shown to preferably bind to cell membranes and to interfere with sodium- and potassium- ATPase function. Hg-related alteration in cellular membranes makes them more permeable or 'leaky' and leads to an altered ability to regulate the flow of elemental or molecular ions, morphological changes, or cell death. It is possible that a selective leaky membrane phenomenon would permit cations of aluminum, mercury, lead, and calcium to enter the cell, bind to sulfhydryl groups on the nuclear envelope, and alter biochemical processes. 4. The interaction of Hg with the essential trace elements Se and Zn, which have been shown here to be diminished in the presence of Hg, could result in deficiency of these essential elements and lead to cellular dysfunction.

The authors noted that "the source of brain Hg in AD is not known although dental amalgams and environmental sources such as seafood are potential sources." They further stated "this and our previous studies suggest that Hg toxicity could play a role in neuronal degeneration in AD. The extreme elevation of Hg in the nbM in AD could relate to the severe degeneration of the nucleus and to the cholinergic deficit in AD."

*****

Duhr, E; Pendergrass, C; Kasarskis, E; Slevin, J; Haley, B.

Hg$^{2+}$ Induces GTP-Tubulin Interactions in Rat Brain Similar to Those Observed in Alzheimer’s Disease.


**ABSTRACT:** The pathogenesis of Alzheimer’s Disease (AD) is unknown. Previous work in this laboratory, utilizing SDS-PAGE and autoradiography, has shown that (i) tubulin in AD brain is less photolabeled by the GTP formula than is tubulin from control brain (Ann Neurol. 26:210-5. 1989) and (2) low micromolar levels of Hg$^{2+}$EDTA specifically blocked interactions of tubulin-GTP formula in control human brain homogenates giving a photolabeling profile identical to AD brain (FASEB J. 4:A2151. 1990).

Earlier work on tubulin photolabeling investigating the effects of aluminum on rat and rabbit brain showed no difference from controls. (Neurotoxicology. 9:429-42. 1988.) Elevated levels of Hg in AD brain have been reported by others (Neurotoxicology. 9:1-7. 1988).

The authors’ latest data show that brain samples from mercury-fed rats display an abolished GTP-tubulin interaction similar to AD brain samples as determined by GTP formula photolabeling profiles. Removal of mercury from treated rats did not reverse the effect.

The authors concluded: "These results suggest that certain complexed forms of Hg$^{2+}$ must be considered as a potential source for the etiology of AD."

**BIO-PROBE COMMENT:** Tubulin is a protein substance that is essential for the formation of the neurofibril matrix. Without tubulin, the result is what is called "neurofibril tangles", which is the predominant feature found in Alzheimer’s Disease.

The rate of tubulin synthesis is determined by analysis of the radiolabeled precursor. In human AD brain tissue, tubulin synthesis is impaired compared to controls. That is, there is less tubulin in the brain tissue
of AD victims, particularly in the areas of the brain where these researchers found high accumulations of mercury.

The addition of mercury, in the same amounts as they found in the human brain tissue of AD victims, to the brain tissue of rats caused a blockage of tubulin synthesis. The same procedure conducted with aluminum had no effect.

This series of published research studies was conducted by highly qualified medical scientists over a long period of time and analyzed a large number of brain samples. They firmly establish the connection of mercury to Alzheimer’s Disease. Further, it is important that the researchers themselves noted dental amalgam fillings as a primary potential source of the high levels of mercury found in the brain tissue of victims of Alzheimer’s Disease.

*****

Arenholt-Bindslev, D; Larsen, A.
Mercury Levels in Waste Water from Dental Clinics.

ABSTRACT: As a consequence of growing concern about the environmental effects of mercury handling in dental clinics, restrictions on mercury waste handling are politically planned in a number of European countries. So far only Sweden has established a special legislation in this field. The aim of the present study was to determine the amount of mercury in waste water samples from dental clinics, since no data on this problem are available. In 20 private dental clinics in Aarhus, Denmark, the total amount of waste water from the dental units was collected during one working day. The waste water samples were collected as close to the waste pipes into the main sewerage system as possible, i.e. after passage of sedimentation or filtrating equipment. In each clinic the individual constructions of the drain system and amalgam separating equipment were described. All clinical procedures as well as daily routine cleaning/disinfesting procedures accomplished during the sampling period were recorded. Mercury levels in the samples were determined by flameless atomic absorption spectrophotometric analyses. From clinics without modern amalgam separators the total amount of mercury collected in the sewage ranged from 62-1683 milligrams Hg per day (mean 219 mg Hg/unit/day). From clinics equipped with amalgam separators which passed the Swedish acceptance programme values ranged from 24-148 mg Hg per day (mean 43 mg Hg/unit/day). In general the amount of amalgam procedures performed in the clinics during the sampling period was not reflected in the amount of mercury collected. It was concluded that there is a wide variation in the amounts of mercury let out with the sewage from individual dental clinics. Modern amalgam separators reduced the mercury burden significantly. However, the values obtained in sewage samples which passed Swedish accepted separators suggested that the Swedish laboratory acceptance programme for amalgam separators do not sufficiently reflect the efficiency of the separators in the clinical situation.

*****

Eide, R; Wesenberg, GR.
Correlation Between Long-Term Mercury Vapor Exposure and Rat-Kidney Mercury levels.

ABSTRACT: The primary accumulating organ in mercury vapor exposure is the kidney. The aim of this study was to determine if a mercury vapor exposure system could be made stable enough to produce reliable results in long-term animal experiments by correlating exposure doses with mercury contents in rat kidneys. The system consisted of four connected plexiglass chambers; one chamber containing the mercury source, one for mixing the mercury vapor with air, one exposure chamber and one containing activated coal filters and mechanisms for regulating the air-flow. Additional control and supporting equipment were also employed.

Groups of twelve Wistar rats were exposed to levels of mercury vapor varying from 0 to 100 mcg/m³ for six hours five days a week for seven weeks. By constant monitoring the mercury exposure level was shown to have a high degree of stability. After sacrifice the renal cortices were digested and the mercury levels determined by cold vapor atomic absorption spectrophotometry. The correlations between the mercury
levels of the kidneys and the exposure levels were highly significant. It was concluded that the exposure system has a high degree of stability and is well suited for long-term low dosage animal experiments. Also, the uptakes of mercury in the kidneys were highly correlated with the exposure dose even at the lowest concentration levels.

*****

SPECIAL REPORT

The following review is from the "Grand Rounds" section of the March 1991 edition of the Clinical Pharmacy journal. The editor states that the "Grand Rounds" section papers are patient case reports and literature review combined in a way that gives them high educational value. The case generally deals with a difficult therapeutic problem or dilemma that is commonly encountered but may be overlooked or misunderstood. CP readers are encouraged to use the reports for educational group discussions.

The case deals with elemental mercury poisoning and was reported by the Clinical Coordinator of a hospital Pharmacy Department (MJF) and an Assistant Professor of Pediatrics at Michigan State University (DJS).

Florentine, MJ; Sanfilippo, DJ, II.
Elemental Mercury Poisoning

INTRODUCTION: The authors stated that mercury is second only to lead as a cause of heavy metal poisoning because of its current widespread use, including dental amalgam fillings. Their case illustrates the myriad medical, psychological, scientific, and financial problems associated with inhalational elemental mercury poisoning.

CASE REPORTS: Three siblings with inhaled elemental mercury toxicity are described. A 4-year-old girl was admitted to the hospital on 21 August 1989 with a history of fever, increasing irritability, fatigue, malaise, insomnia, headache, anorexia, and ataxia. She was discharged 2 days later with a diagnosis of acute cerebellar ataxia. Her condition worsened over the next 18 days and she was rehospitalized. Laboratory analyses, including CBC, serum electrolytes, erythrocyte sedimentation rate, and urinalysis were normal on both visits. CT scan and MRI results were normal, but blood pressure was elevated. She was diagnosed as having essential hypertension and was medicated but finally suffered a seizure.

Meanwhile, her 11-year-old sister was hospitalized for evaluation of fatigue, weakness, lower back pain, and ataxia. She also exhibited high blood pressure and, additionally, paresthesia in her extremities. Her MRI was normal but an electromyogram study was interpreted as consistent with a mild demyelinating neuropathy.

Heavy metal screening tests, including whole-blood mercury concentrations, were conducted on both children and were interpreted as normal by house staff physicians and consultants as well as by the toxicology laboratory that performed the test. Upon reviewing the case histories, a pediatric intensive-care specialist recognized the older girl's blood mercury concentration of 5.5 mcg Hg/dL as indicative of toxicity although the normal limit was considered to be 6.0 mcg Hg/dL. Twenty-four hour urine collection found both girls to exceed the normal value of 20 micrograms. Chelation therapy with first BAL, then n-acetyl-d,l-penicillamine (NAP) greatly increased urinary mercury output. Both girls experienced side effects to the chelators used. They both also required physical therapy and exhibited remaining visual field defects two years after diagnosis.

It was discovered that the girls' 10-year-old brother had accidentally spilled a container of 0.5-1.0 ounce of elemental mercury on his bedroom carpet. Elevated levels of mercury vapor were found in a number of rooms in the house as well as the vacuum cleaner. The family was obliged to evacuate the house and considerable difficulty was encountered in decontaminating. Although the boy was asymptomatic and his blood mercury level was well within the normal limit, he was given BAL chelation which dramatically elevated the mercury in his urine.

DISCUSSION OF MERCURY POISONING AND ITS MANAGEMENT: The authors discussed the signs and symptoms of mercury toxicity, the interpretation of mercury concentrations, and pointed out the
use of mercury in dental amalgam fillings. They noted the discrepancies in the published literature regarding assignment of normal versus toxic blood and urine mercury levels, stating: "It is apparent that clinicians and toxicology laboratories may be easily misled by the varied toxic and normal ranges (or lack thereof) as well as by the various units reported. Moreover, such values have been derived entirely from data obtained in adults exposed to mercury in the workplace; the data do not include children. Teleologically, no mercury should be found in the blood or urine of any symptomatic, 'nonexposed' child or adult. Any mercury found in a child's blood or urine should be cause for investigation. A further dilemma is that urine or blood mercury concentrations may often be nondiagnostic in persons with chronic exposure, who have gradually developed an extensive and relatively unexchangeable tissue mercury burden. Thus, while the finding of any mercury in the blood or urine can confirm exposure, it may often correlate poorly with the manifestation of symptoms."

The authors emphasized the many pitfalls in the management of elemental mercury poisoning, which can lead to delays in diagnosis and treatment. They recommended that the diagnosis be based on a careful evaluation of signs and symptoms, followed by analysis for mercury of a 24-hour urine collection (where normal=0) and nerve-conduction studies. They further recommended chelation challenge urine mercury measurements to determine a body burden of mercury and recommended DMSA as the ideal chelating agent.

****

Succimer Approved to Treat Severe Lead Poisoning in Children.
FDA Medical Bulletin/March 1991

"FDA has approved the first oral medication to treat severe lead poisoning in children. The drug, succimer (Chemet), will be used to treat children whose blood lead levels are above 45 micrograms per deciliter (ug/dl).

In one clinical study, 15 children with lead poisoning received 350 mg/m² of succimer (10 mg/kg) every eight hours for five days. Blood lead levels dropped an average of 78%, compared to a lesser drop with lower doses or with 1,000 mg/m²/day CaNa₂EDTA, the standard injectable treatment.

As with other chelators, a rebound rise in blood lead levels was found 2 weeks after a five-day course of therapy with succimer. Further clinical trials to deal with this problem showed that continuing the therapy with 350 mg/m² every 12 hours during the ensuing 2 weeks effectively eliminated rebound during the treatment period and reduced the rebound after therapy ended. The recommended treatment course lasts 19 days. It is also recommended that patients have their blood lead levels monitored at least once weekly after therapy until they are stable to determine whether a repeat course of therapy is indicated.

Therapy with succimer should always be accompanied by the identification and removal of the source of the lead exposure, since the drug will not prevent further lead poisoning.

Clinical experience with succimer is limited to about 300 patients, so the full spectrum and incidence of adverse reactions, including the possibility of allergic reactions, has not been determined. Common adverse reactions found included gastrointestinal symptoms and rash; increases in serum transaminases were observed in about 10 percent of patients. The safety of uninterrupted treatment lasting more than 3 weeks has not been determined, and such treatment is not recommended.

The drug was approved Jan. 30, 1991, and is marketed by McNeil Consumer Products, Ft. Washington, PA 19034."

BIO-PROBE COMMENT: The FDA approval of this product is considered significant. Succimer is in reality DMSA, one of the preferred chelators for decreasing mercury body burden. It is significant because although approved for lead poisoning it coincides with detoxification protocols being utilized for mercury i.e., 30 mg/kg body weight. This is the same as 10 mg/kg taken every eight hours. Also considered significant is the discussion relating to the "rebound effect" and the fact that extending the course of treatment tended to eliminate the rebound effect. Perhaps the most significant aspect of finally having DMSA available as an FDA approved product is that the potential exists to document, for insurance and possibly legal purposes, the fact that a person had mercury present in their body prior to amalgam
replacement. Use of DMSA in a mercury challenge test protocol, that would first take a base-line urine mercury level, then do another urine mercury after DMSA challenge will establish scientifically the presence or absence of abnormal mercury loads. It is our understanding the DMSA reaches peak levels in the blood two hours after ingestion and that the appropriate time to capture urine samples is 2-4 hours after the DMSA challenge.

**********

FORUM

IAOMT ANNUAL SCIENTIFIC SESSION

The Annual Scientific Session of the International Academy of Oral Medicine and Toxicology will be held at the Sheraton Inn in Seattle, Washington on 13-15 September 1991. Meeting chairman is Paul G. Rubin, D.D.S. Phone (206) 328-0221 or write to P.O. Box 20039, Seattle, WA. 98102 for registration. Special room rates are available by specifying "IAOMT", and may be obtained by phoning (206) 621-9000.

Scientific presentations on friday and saturday include: "New Research on Dental Amalgam Safety" - Dr. Murray J. Viny; "Current Considerations on the Use of Dental Amalgam" - Dr. Michael F. Ziff; "Bioconversion of Mercury by the Oral and Fecal Microbial Flora" - Dr. Anne O. Summers; "Alternative Techniques to Amalgam" - Dr. David Kennedy; "Effective Detoxification Procedures for the Mercury Toxic Patient" - Dr. Sandra Denton; "Porphyrin Profile as an Indicator of Mercury Toxicity" - Dr. James Woods; "Electrochemistry of Dental Amalgam" - Dr. James V. Masi; "The Effect of Mercury Amalgam on Health" - Dr. Robert Siblerud; "A Critical Look at Evidence Supporting the Safety of Amalgam" - Dr. Paul Rubin; "Questions on the Safety of Fluoride" - Dr. John Yioumouyiannis; "A Study of Toxic Materials in Dental Office Wastestream" - Cynthia Welland.

The 1991 Annual Meeting of the IAOMT will be held on saturday morning and a public forum will be presented friday evening.

*****

"AMALGAM WARS" VIDEO

Michael Brown of Productions West in Naperville, Illinois has produced a one-hour documentary for television titled "Amalgam Wars." This outstanding video has already been shown in 8 states. Viewing on local Public Broadcasting Stations (PBS) in major cities include Sacramento (CA), New Orleans (LA), Knoxville (TN), Pueblo (CO), and Charleston (SC). It is important that we make an effort to have it shown on as many PBS stations as possible. You and as many of your patients’ as possible should contact the Programming Department of your local PBS stations and encourage them to show this dynamic video. It is FREE to PBS stations. They may obtain it through Mr. Jake Clanderman of Central Education Network in Des Plaines, Illinois.

MERCURY AMALGAM LEGISLATION

Legislative initiatives calling for patients' "Right to Know" and "Informed Consent" for the use of mercury amalgam dental fillings are occurring in several states. The most current efforts include California Senate Bill 934 being introduced by Senator Diane Watson of Los Angeles; reintroduction of Alaska legislation (Senate Bill 123) by Senator Pat Rodey; in Illinois, Representative Mary Lou Cowlshaw is sponsoring H.R. #13; and State Senator Lawrence Jacobsen is introducing legislation in Nevada. It is important that everyone concerned for the rights of dental patients on this issue support these efforts in any way possible. Sooner or later, a breakthrough will occur in one state and the precedent will be set.

ANNUAL NATIONAL DENTAL SEMINAR IN HOMEOPATHY

The seminar will be held at the Oak Brook Hotel & Conference Center, in Oak Brook, Illinois on October 25, 26, 27, 1991. Basic and Advanced courses will be offered. Fees are Basic Course $375.00, Advanced Course $350.00 with a $50.00 reduction if paid by September 1, 1991. If you are repeating a course, there is a 50% reduction. For a brochure, write to National Dental Seminar, P.O. Box 123, Marengo, IL 60152. For reservations at the Oak Brook Hills Hotel call 1-800-445-3315.