SPECIAL ARTICLE
What they were saying about mercury 80 years ago!
Effects and Use of Inorganic Drugs. Schulz H .........................2

REVIEWS/ABSTRACTS
Mercury exposure from amalgam. Skare I .........................7
Multiple Sclerosis and mercury in cerebrospinal fluid.
Ahlrot-Westerlund, B .................................................. 7
Amalgam - Hg brain level. Eggleston D. et al ......................9
An amalgam tattoo causing local and systemic disease.
Weaver, T. et al ..........................................................9

SPECIAL REPORT
The issue is no longer biocompatibility of amalgam.
The issue is now the incompatibility of the ADA and
your constitutional rights. Ziff, S .................................10

FORUM
Joel Berger is now in law school ...................................12
"Effects and Use of Inorganic Drugs" by H. Schulz, Dept of Pharmacology, Univ. Greifswald. G. Thieme, Leipzig, 1907.

NOTE: Bio-Probe is indebted to Dr. Mats Hanson of Sweden for the translation of this eighty year old book as well as all the other major scientific articles translated from Swedish or German that Dr. Hanson provides us. He is a major crusader in the fight to bring the truth about mercury amalgam to the innocent unsuspecting public as well as the concerned health professional.

There is no form, no compound of mercury which can not be absorbed by the organism. Experience has since long taught us, and this has also later been shown by careful experiments, that also metallic mercury is taken up if it, in its most dispersed state, comes into contact with parts of the body with the capacity to absorb. And just as the metal can penetrate into the inner parts of tissues through the oral mucosa, the respiratory organs and the gastrointestinal tract, it can also pass the skin. Carefully introduced into the circulation it can also dissolve after a short time. According to today's knowledge mercury will, under the influence of the living cells and irrespective of its original form, finally form an albuminate which has the property of being easily solubilized in the presence of salt, sodium chloride. It is interesting that this albuminate, enough away from the cells, will again decay and the pure metal will appear. Thus, in individuals who have been intensely treated with mercury compounds, one has been able to find metal droplets in pockets in the lungs, in the bone marrow, in gallstones and in other places.

The central nervous system can react on mercury with at first slight, then with increasingly severe disturbances of the psychic functions. Thinking is made difficult, loss of memory and reduced capacity for coherent mental activity appear. Attacks of aphasia (inability or difficulty to speak, write or understand spoken or written language) can occur. During the further development there will, depending on the circumstances, be an extensive raise of the psychic reflex irritability, so called erethismus mercurialis. Already a simple word from an acquaintance can cause quite unmotivated attacks of shyness and anxiety. Also the ability to speak, apart from the attacks of aphasia, suffers difficulties since there will be reduced ability to control the voluntary tongue movements. Stuttering can occur: psellismus mercurialis.

The effects of mercury on the spinal cord and its peripheral extensions will appear as general feelings of tiredness and lack of strength in the muscles. A strange weakness in the whole area innervated by motor nerves, will appear and increase more and more. The reduced capacity for muscular work is connected with,
at first periodical and then continuous muscular tremor in single groups of muscle fibers, limbs and then the whole body. The increasing weakness, connected with tremor, can finally cause paralysis. Also occurring, but more seldom, are attacks of epilepsy with more or less disturbed consciousness. Along single nerve tracts there can be painful sensations, also joint pains. These are often swollen. In hands and feet there can be a feeling of numbness.

The origin of the attacks of headache, vertigo and dizziness which appear under the influence of mercury is not quite clear since changes in the vascular system can occur. Also occurring are strokes with various consequences.

When mercury affects the sensory organs, the disturbances in the organs certainly go hand in hand with changes in the blood supply. In the eye we can see increased intraocular pressure combined with a burning feeling and elevated production of tear fluid. The visible blood vessels appear injected. Increased sensitivity towards light and cramps in the eyelids give a pronounced eye inflammation. The pupilla reacts more slowly towards light; sight disturbances of many different kinds appear and these can lead to blindness.

The ear reacts with reduced hearing ability, combined with inflamed muscles and external ear canal. Strong pains and an outflow of thin wax, sometimes even fiery substance from the ear completes the picture of an inflammation of the external ear canal.

Regarding the organs for blood circulation it has been observed that the heart muscle, during a long time of mercury influence, loses power and energy....changes in the walls of the blood vessels which indicate an inflammatory process and sometimes there will be ruptures and chronic degeneration of the vessels.

Mercury causes a swelling of the lymph vessels of the throat and neck, in armpits and groins....everything which can be called a gland reacts with mercury. Not a single gland, whatever its importance or location, can escape the irritating effect of mercury. Swollen glands and increased secretion are the first symptoms, which can be followed by inflammation and even destruction of the gland with a reduced function.

Then one observes, soon after the uptake of mercury in the organism, an increased mucous production in the mouth. This is later followed by an enormously increased saliva production from the salivary glands. The secretory products in the mouth, saliva and mucous, are easily degraded, the well known bad smell: foetor ex ore. Simultaneously the gums swell. They bleed easily and have a tendency to form ulcers. The teeth become tender, start to
loosen and subsequently fall out. In the oral mucosa there will be local inflammations of single or several mucous glands which give rise to aphthous manifestations. The whole oral mucosa including the nasal mucosa appears swollen of blood, the swelling of the upper throat and the tonsils gives swallowing troubles and pains. On the tonsils appear whitish or irritating deposits. Even the tongue can be attacked. Cases of intense glossitis, for instance geographic tongue, caused by mercury have been recorded.

The reaction of the stomach and intestines are varying and dependent on the solubility of the mercury preparation....A clinical picture with strong resemblances to severe dysenteria can develop....Also after treatment with a number of other mercury preparations, injected under the skin and thus certainly not in immediate contact with the intestinal mucosa, have ulcers and bleeding in the intestines been recorded.

An increasing disturbance of the appetite, connected with an unpleasant taste, sometimes described as metallic and deposits on the tongue, makes it clear that a catarrh in the stomach is developing. Thirst is sometimes noticeably increased, loss of appetite can alternate with attacks of violent hunger. A burning sensation in the throat and stomach, pains and diarrhea shows the further development of the stomach disturbances, caused by mercury. In the intestines there will be a considerable production of gases, the abdomen swells, pains in the intestines, catarrh in the duodenum, blocking of the gall duct. The colon is the next most affected part of the gastrointestinal system. Also hemorrhoids, pain and bleeding can occur.

Pains and a light swelling of the liver region has also been observed with people who have been treated with mercury and is a sign of a slight irritation of the liver. Also attacks of jaundice can occur. Regarding the kidneys the effects of small amounts of mercury is a clear increase in urine production. The urine can then be rich in uric acid salts and urination can cause a burning pain. The further influence of mercury will be unpleasant feelings in the kidney region, difficulties to urinate, pains and a reduced urine volume.

The effects of small amounts of mercury on the male genitals can cause strange inflammatory processes in the mucosa of the urinary duct and on the outer mucosa of the genitals...prolonged pains in the sperm duct and in the testicles as well as during erection and ejaculation. In women there will be inflammations of the outer genitals, vaginal catarrhs and disturbances of menstruations. That there is a tendency to miscarriage during chronic mercurialism is well known from the toxicology of mercury.

Since mercury have so many effects on our organism, it is not surprising that also the complicated organ which our skin is,
also reacts in various ways. The skin responds with everything from a simple redness to extensive eczema with exfoliation and destruction of the surface layer with concomitant inflammations of skin glands; serious impetigo-like infections, elevated red or pale areas with severe itching, edema and loss of hair and nails.

The connective tissues will not be excluded from the effects of mercury. This is clearly shown in bone tissues. In the connective tissues around the bones (periosteum) there can be inflammations with pains and also deeper destruction of the bone tissue.

Mercury is a strongly irritating substance for all organs and all tissues which can react. This property is, according to our present knowledge, an effect of an increase in the oxygen and chloride turnover in the living tissues. According to biological laws mercury in small amounts will have an irritating effect on the cells. Increased amounts will cause damage and even more will cause destruction and cell death, atrophy of organs and a loss of their functions.

BIO-PROBE COMMENT: We found it extremely difficult to believe that we were reading information on mercury published eighty years ago. Strangely enough, the data is more valid today than it was eighty years ago. During the intervening period thousands of scientific research articles have been published validating the clinical and laboratory observations so clearly and succinctly stated by H. Schulz in his 1907 book. There is also a rather macabre parallel; in 1907 the author was discussing iatrogenically induced effects of medical treatment with mercurials and in 1987 we devote our efforts to publishing information dealing with iatrogenically induced effects of dental treatment with mercury. Two different modalities producing the same results—mercurialism!

Isn’t it strange that medical scientists have been able to clearly document the pathological and physiological effects of "therapeutic" use of mercury by the medical profession whereas dental "scientists" and the ADA in 150 years of supposedly investigating and extensively studying the therapeutic use of mercury in dentistry have not been able to document anything except an "occasional and rare" case of mercury hypersensitivity. It is apparent that the ADA wishes us to believe that the THERAPEUTIC IMPLANTATION OF A TIME-RELEASE POISONOUS SUBSTANCE IN THE HUMAN BODY RENDERS THE POISON HARMLESS AND INEFFECTIVE, WHEREAS THERAPEUTIC ORAL ADMINISTRATION OF THE SAME POISON, TO THE SAME PATIENT, WILL CAUSE DEVASTATING PATHOLOGICAL AND PHYSIOLOGICAL DAMAGE.

HOW WILL TOXICOLOGICAL HISTORIANS RECORD THIS STRANGE QUIRK IN THE LAWS OF BIOLOGY? MAYBE THEY COULD TITLE THE CHAPTER "WHEN IS A POISON NOT A POISON?"
The following abstract was presented at the recent Scandinavian Hygiene Meeting held in Iceland, August 1987.


Introduction
Several recent studies (1,3,4) have shown that the emission of mercury vapor from amalgam is larger than previously supposed. In connection with our studies of methods for the evaluation of occupational Hg-exposure (2) - see also a separate presentation- we have been interested in quantifying the amount of Hg which can be taken up from amalgam in the mouth. Mercury vapor is a dangerous form of inorganic mercury since it, physically dissolved, can penetrate for example, the blood-brain barrier.

Currently the National Board of Occupational Safety and Health in Stockholm is discussing a reduction of the MAC level for mercury vapor in air and also the introduction of biological threshold levels. Therefore, it should be of interest to evaluate background levels in air and biological material that could be caused by factors other than occupational exposure.

Methods
We have started this study both with basic studies in vitro of mercury emission from amalgam discs in controlled environments and in vivo on about 25 test persons by measuring dental status, mercury emission to air and saliva in the oral cavity and the collection of 24 hour urine samples. The mercury emission to air is quantified by sampling for 10 minutes with a specially constructed wand in the mouth, coupled to a 1m UV-tube, followed by Kmn04 flask. Mouth rinse, saliva collection and stimulation by chewing is used to clarify the magnitude and nature of the emission.

Results
So far we have observed that amalgam carriers often have mercury levels above the occupational MAC level in their exhaled air and during chewing the release increases 3-4 times. More important is, however, the emission of mercury expressed as an amount per unit of time and the proportion of this emission taken up by the body.

Our preliminary results show that the nonstimulated basal emission of mercury vapor (Hg0), e.g. mercury emission without chewing, can be up to 50 ng Hg/min, equivalent to about 500 ug/week. This rate of emission of a highly absorbable form of mercury, can be compared to the World Health Organization...
recommendations for maximum levels in food of 200 ug methylmercury and 350 ug inorganic mercury per week respectively. The real uptake will depend on the way the person breathes. Urinary levels of up to 25 nmole/l (=5 ug/l) have simultaneously been found.

Example 1. The value of 25 nmole Hg/l can be compared to 250 nmole/l which is the average for 8-hours of exposure to TLV (50 ug Hg/m³ of air) (5). If there is linearity, the measured urinary level should correspond to a life-long series of 8-hour exposures at 1/10th of current permissible level. If the level is reduced, the difference between occupational exposure and amalgam exposure will be further reduced.

Example 2. From a measured amalgam emission, based on measurements in the oral cavity of 500 ug Hg/week, about 1/10 or 50 ug Hg will be excreted in urine. The rest will be exhaled, swallowed with saliva (Hg⁰/Hg²+) or retained in the body.

Conclusion
The emission of mercury vapor from amalgam is not insignificant and must be considered during evaluations of occupational exposures, especially if the permissible levels will be reduced. The fact that amalgam emission has so far been neglected might partly explain why correlations between air measurements and measurements of biological samples have been weaker for the lower ranges of external exposures. Amalgam exposure is very likely the largest source of non-occupationally exposed persons "normal values" -extreme consumers of fish from inland lakes excluded.

References

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This next abstract was presented at the Second Nordic Meeting on Trace Elements in Human Health and Disease, held in Odense, Denmark, 17-21 August 1987.


Background
In a study in progress, mercury levels in cerebrospinal fluid (CSF) are being measured. So far 12 unselected, consecutive patients, 3 males and 9 females (age 30-61) with neurologically verified multiple sclerosis (MS) with oligoclonal bands in their CSF have been completed. Duration of illness is 1.5 to 12 years.
Of 14 controls (age 17-50), 11 have undergone investigation for headache without any pathological findings and 3 were healthy volunteers. One patient had previously been occupied by Hg-associated work but none of the controls.

They all had normal dietary habits without extreme fish consumption from fresh water lakes. It has not been possible to match the patients and controls concerning sex and age.

Results
As shown in the following table, all patients had increased mercury levels in their CSF when compared to the controls.

<table>
<thead>
<tr>
<th></th>
<th>Range of variation</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients, n=12</td>
<td>1.5 - 5.4</td>
<td>3.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Controls, n=14</td>
<td>0.1 - 1.2</td>
<td>0.4</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Discussion
It is well known that vapor of mercury, organic as well as inorganic mercury compounds are highly toxic to the central nervous system (CNS). They provoke e.g. lipid peroxidation in cells (1,2,3), inhibit enzyme activity, disturb seriously the immune system and receptor functions, and provoke auto-immune responses (4-10). They also penetrate the blood-brain barrier easily (11).

The toxic effects of mercury in CNS seem to be in accordance with the clinical picture of MS and the detrimental effects of mercury may be caused in two ways. One should be by direct intoxication to the nerve cells (12) and the other by causing an angiopathy in the venules surrounding the myelin sheaths in the CNS (13,14).

It may be commented that at the Symposium of the 13th world congress of Neurology 1985 in Hamburg a report showed prevalence of MS in Europe. In some towns of northern Bohemia surprisingly high rates were found, 293/100,000 as the highest compared to 40-50/100,000 in more "normal" areas. These towns are situated in an area of severe heavy and metallurgic industries.

The correlation of heavy metal exposure and MS need to be further stressed and studied.

BIO-PROBE COMMENT: The listing of references cited in the above study will be provided to Bio-Probe subscribers upon request. It is our understanding that the study will also attempt to correlate CSF mercury levels with numbers and surfaces of amalgam fillings and that preliminary information on one patient supports the hypothesis that mercury from amalgam fillings contributes to total CSF mercury.

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Total mercury content of brain tissue from 77 cadavers was analyzed by cold vapor atomic absorption spectrophotometry (CVAAS), and total mercury content of brain tissue from 83 cadavers was analyzed by radio chemical neutron activation analysis (RNAA). Using duplicate tissue samples, consistently higher mercury levels were measured by RNAA when compared to CVAAS.

A positive correlation between the number of occlusal surfaces of dental amalgam and mercury levels in the brain was demonstrated. The results of this study suggest that mercury from dental amalgam fillings may contribute to total mercury brain content.

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


Abstract.
Amalgam tattoos are common oral lesions. The case presented here involved a 33-year-old woman who had an amalgam tattoo for 2 years and complained of localized soreness and occasional swelling as well as systemic symptoms of weight loss, fatigue, sinusitis, and headaches. After excisional biopsy of the lesion, the patient's complaints ceased dramatically. It is suggested that alterations in healing due to the presence of amalgam particles led to systemic as well as local disease.

Bio-Probe considers this case history to be a very significant contribution to the other scientific research demonstrating systemic effects of amalgam. We would like to quote the author's views expressed in the last paragraph of their article. "This case is instructive for several reasons. This woman had seen many practitioners and had given essentially the same history to all. Because of the location of the pain, all of those clinicians told the patient that she was suffering from stress-induced TMJ-MPDS. The intraoral lesion was usually dismissed as an innocuous amalgam tattoo. In this case, the history was the important determinant in diagnosis. Second, the fact that one entity such as an amalgam tattoo is present is no reason why a second or third entity (bacterial contamination) cannot be responsible for the signs and symptoms of disease. Third, when patients stated, "This may sound funny, but...," they may just be indicating exactly what is wrong. This phenomenon appears to be borne out in casual conversations with other clinicians. Finally, even lesions that are easily recognized clinically may still require biopsy
which, surprisingly, may turn out to be curative as well as
diagnostic." Reprint requests to Captain George M. Taybos, Oral
Diagnosis Department, Naval Dental School, Naval Dental Clinic,
Naval Medical Command National Capital Region, Bethesda, MD
20814-5077.

SPECIAL REPORT

THE ISSUE IS NO LONGER BIOCOMPATIBILITY OF AMALGAM.
THE ISSUE IS NOW THE INCOMPATIBILITY OF THE ADA
AND YOUR CONSTITUTIONAL RIGHTS!

The June 1987 edition of the ADA Principles of Ethics and Code of
Professional Conduct has been revised as follows:

CODE OF PROFESSIONAL CONDUCT
Section 1-J. Representation of Care and Fees

Advisory Opinion No. 7.
Based on available scientific data the ADA has
determined through the adoption of Resolution 42H-1986
(Trans.1986:536) that the removal of amalgam
restorations from the non-allergic patient for the
alleged purpose of removing toxic substances from the
body, when such treatment is performed solely at the
recommendation or suggestion of the dentist, is
improper and unethical.

The Council reminds constituent and component societies
that before a dentist can be found to have breached any
ethical obligation the dentist is entitled to a fair
hearing.

As a corollary to the above formal action by the ADA, there
is another even more insidious campaign being mounted to
discredit any form of dentistry being practiced that does not
conform to that prescribed either directly or indirectly by the
ADA. For example, the AGD Impact Vol. 15, No. 7, August-September
1987 carried a major story on the subject that was headlined on
page 1 as "Fraud in dentistry - Why can't the profession find a
'miracle cure' to curb dental quackery?" The story was very well
done and anyone reading it is lead to believe that any dentist
even thinking of practicing or advocating a more holistic
practice approach, is certainly guilty of quackery. This, of
course, is exactly what the article intended to do.

One of the fraud activists riding the subject to "fame" is
John E. Dodes, D.D.S. of New York who is Director of the New York
Chapter of the National Council Against Health Fraud. In a one
page article in the J Colorado Dent Assoc., Sep/Oct 1987 issue,
Dr. Dodes, without citing one study to support his statements, categorically states that all "holistic" or "alternative" therapies being practiced by dentists today are useless and health frauds. Dodes identifies mercury toxicity as the most blatant health fraud in dentistry today and goes on to say "The malpractice awards and bad publicity that will inevitably be a consequence of this unethical behavior may forever alter the nature of dental practice." Bio-Probe believes that a scientifically defensible definition of a quack is anyone who states amalgam is safe and continues to implant this poison in their patients. It will be interesting to see which definition the courts will use.

The problem with both articles cited is the totality of their condemnation. There have always been unscrupulous individuals, ready to capitalize on sickness and despair, and this will continue to be the reality, as long as this world is inhabited by humans. We have no quarrel with efforts to control these opportunistic and unscrupulous individuals. We do however, take great exception to categorizing every individual studying, researching, or utilizing non-invasive and non-harmful alternative modalities, as frauds and quacks.

September 1987 was a great month for amalgam advocates. In addition to the previous articles, there were four other pro-amalgam articles that appeared in print. The September 1987 issue of the California Dental Association Journal carried articles by Fan P.L., Langan D.C. et al. and Siew C. et al. The October 1987 issue of the Reader's Digest carried a pro-amalgam report in the "news from the world of medicine" section that had been adapted from an ADA News article.

If you haven't gotten the message, anyone who doesn't wholeheartedly support the implantation of poisonous mercury amalgam in their patients, had better start planning on how he or she is going to defend their "licensed" right to practice dentistry.

After the change to the ADA Principles of Ethics and Code of Professional Conduct was published in the September 7, 1987 issue of the ADA News, Bio-Probe received several phone calls from dentists around the country who wanted to know "what are you going to do about the ethics issue?" Like the dentists who called, we could see the handwriting on the wall. It has been abundantly clear that the "establishment" can say and publish anything they wish to, without ever having to scientifically support their statements, and that this situation is only going to get worse, not better. So, we decided that the time had come to see if there was a legal basis or way to stem the vicious onslaught against mercury-free dentists.
Two prestigious law firms in Washington D.C. have evaluated the merits of the case and feel that a lawsuit challenging the ADA action would succeed. Based on that decision, action was also taken to form the Foundation for Toxic Free Dentistry (FTFD), which will now begin the task of seeing whether there are a sufficient number of dentists, concerned enough about their rights and those of their patients, that would be willing to contribute and pledge money to protect those rights. Legal action challenging the ADA will require at least $200,000.00. It will be the responsibility of the FTFD to raise the monies required to support the legal actions to be initiated. Before legal action can proceed, FTFD must have cash and pledges totalling at least $200,000.00. This means that at least 200 dentists or other contributors, must make an initial contribution of $250.00, and additionally pledge to contribute $200.00 per quarter for the next year. It should be noted that contributions to FTFD will be tax deductible. The time has come to express your concern with money and not just words. The lawyers have the words and a court of law will provide the "key" to finally discerning the "truth."

An accounting firm in Fairfax, Virginia has been hired to insure that all disbursements made by the Foundation are in accordance with its charter and objectives. A principle of the accounting firm, who is a CPA, will serve as an officer of the Foundation and will countersign all disbursements.

Contributors to the Foundation will be classified only as supporters of the Foundation and will not be involved in any of the legal actions the Foundation may support. The Foundation will have no memberships for sale and its list of supporters will be classified confidential, for internal use only. In addition, the Foundation is not going to be involved in the lawsuit, other than funding the legal effort to discern the truth. The lawsuit will be initiated on behalf of a group of dentists as a separate action independent of the Foundation. In other words, although you will be contributing to the Foundation, you will not be associated or involved in anyway with the legal action that will be taken outside the Foundation. Should any of you wish to join in the lawsuit, please let Sam Ziff at Bio-Probe know.

The FTFD will be doing a separate mailing soliciting funds. For the convenience of Bio-Probe subscribers we have enclosed a copy of the letter and pledge form. FTFD needs your support NOW!

FORUM

Dr. Joel Berger is now a full time student at the University of Miami Law School. Hurry and get your law degree Joel, there is going to be lots of legal work involving the bioethics of dental material use.