SWEDEN'S DIRECTOR OF CHEMICAL INSPECTION STATES

"AMALGAM WILL BE BANNED"

So read the headline in the Swedish Newspaper Dagens Nyheter on October 6, 1989

SWEDEN'S CENTER PARTY PARLIAMENT GROUP SAY'S

"NO AMALGAM AFTER 1991"

Press Release of September 26, 1989

When Dr. Mats Hanson of Sweden advised us of the above two events we were extremely excited.

Following are verbatim transcripts of both the newspaper article and the Center Party Press Release as provided by Dr. Hanson. The first is the newspaper article that appeared in Dagens Nyheter on October 6, 1989. NOTE: Copies of the original Swedish documents have been included as a part of this issue as we are sending it and the September 1989 issue of Bio-Probe to the Dean's of all medical and dental schools in the U.S.
RAPID PROHIBITION OF AMALGAM

The question is not if, but when we ban amalgam, says the director of the Chemical Inspection, Kerstin Niblaeus.

This week the Inspection sent the government a list of 10 hazardous chemicals which should be removed.

On that list is mercury: a substance which is a component of amalgam. A ban on amalgam is a decision which the government must take, but Niblaeus is sure: I have not even considered that the government should not decide on a prohibition, she says. The Chemical Inspection intends to substantially speed-up its clean-up of the chemical jungle. Within a month there will be another list with 35 more chemicals which will be forbidden.

The intense environmental debate has speeded up work at the Chemical Inspection. Now the agency's ten inspectors intend to examine all companies which sell "environmentally acceptable" products. The concept "environmentally acceptable" will probably not be allowed. None of the products are environmentally acceptable in the true sense of the words. The new concept will be "environmentally adapted".

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THE CHEMICAL INSPECTION RAISES THE TONE
AMALGAM WILL BE BANNED

Amalgam is one of several products which the Chemical Inspection will ban. The speed of cleaning-up will increase. Reports to the police is a new weapon in the fight.

- With current speed it will take 100 years until the most hazardous substances are gone. That is not acceptable.

This fact is revealed by Kerstin Niblaeus, director general of the Chemical Inspection.

- So far we have banned one hazardous chemical each year. First cadmium, then PCB and now freon. At that rate the process will take too long a time since we know 50-100 chemicals which we want to get rid of.

20 000 CHEMICALS

The Chemical Inspection has only been in existence for three years. The time has been used to get an overview of the chemical situation. There are 55000 registered chemical products in Sweden. They contain 20000 chemicals.

First the task seemed too big but now the Inspection has found a strategy for the 90ies.

This week the Chemical Inspection gave the government a list of 10 hazardous chemicals which should be stopped. In a month a list of another 35 chemicals will follow. Their names are so far not disclosed.

The use of all of them will be discontinued the same way freon was discontinued. Industry will have a schedule for discontinuation. The Chemical Inspection will not consider whether alternatives are available. Experience shows that when a ban is planned by the government, industry will rapidly find replacements.

- So far we have not been rigorous when no alternatives have been around. Then we have got ourselves into a situation with numerous exemptions. Now we act in a new way which will mean a considerably faster way of cleaning-up.

Amalgam contains mercury, one of the ten chemicals on the black list.

- The question is not if, but when we ban amalgam, Kerstin Niblaeus emphasizes.

Mercury is not degraded in nature. Instead it accumulates and causes damage to animal and plant life. In addition it has been shown that amalgam can cause disease in humans.

A decision on a prohibition must be taken by the government.

Do you think the government will approve of the proposal?
I have not even considered that the government should not do so.
In addition to mercury, there is also the dry-cleaning liquid carbon tetrachloride.
- It is a chlorinated hydrocarbon with many harmful environmental effects. The use has increased since the dry-cleaners used freon (CFC). Since freon is banned, the cleaning shops have returned to another hazardous product, according to Kerstin Niblaeus.
- In this situation one has to ask whether dry-cleaning is really necessary. Unnecessary use of chemicals must cease.

IRRITATED THE COMMON MARKET
With the statement above she will be in an exposed position.
- The chemicals are used to make life more comfortable. Often chemicals do things we earlier had to do manually. Chemicals for machine dish-washers and chemical dissolvers for obstructed drain pipes are two examples. Instead of manual removal of the dirt, chemicals dissolve it. The problem is that they also poison the environment.

The new policy of the Chemical Inspection has irritated the Common Market Commission in Brussels.
Recently the chemical para-dichlorobenzene was banned. It is used in blocks to produce a nice aroma. An unnecessary product according to the Inspection which banned it since the substance was a suspect carcinogen.
- We were criticized by the Common Market. They did not think that it was our responsibility to decide what is necessary or not for the consumers, says Kerstin Niblaeus.
- In addition, the Common Market wanted proofs that the substance was carcinogenic. But we persisted and according to Swedish law it is possible to ban substances when there is reasonable evidence to suspect that it is a carcinogen.
"TIDY UP INSTEAD"
- We have to make some sacrifices. Instead of having aromatic blocks in the toilet one can tidy up, she adds.

The hot environmental debate has increased the tempo at the inspection. Just now, the ten inspectors of the agency intend to examine all companies which sell "environmentally acceptable" products.
- Development is extremely rapid and this new phenomenon must be examined, according to Karin Tholan, head of the inspection division. She is a biochemist and is leading nine inspectors.
This "environmental police" will visit about 30 companies to examine the products which are sold as environmentally acceptable.
- We will probably not allow the concept "environmentally acceptable" any more. None of the products is acceptable in the environment, not in the true meaning of the words.
The new concept will be "environmentally adapted".

Until now, anyone has been allowed to start importing chemicals. The only requirement is that a registration is sent to the Chemical Inspection. Together with the registration should be a scientific report. The Inspection has only had time to examine a few of them. Critics have called it a sisyfos work which has to be done at the same time as alarm reports on environmental conditions have been frequent.
- The chemical jungle has paralyzed many government agencies, Kerstin Niblaeus admits.
Now she has a strategy which should make the clean-up work more efficient.
The Chemical Inspection will concentrate on 1000 selected chemicals which can be found in 95 percent of all chemical products. From these, 150 well be more closely scrutinized. There is a surprising lack of knowledge of common household chemicals. Acetone is one example.

Companies which break the law on chemical products will be reported to the police.
EFFECTIVE METHOD
- This is a method which has been shown to be very effective. A police report scares all the companies. In addition we get information from competitors. If a company uses a non-registered chemical it is considered an unfair advantage.
From 1990, the Inspection will examine all new products in advance. Then there will be no need to clean up afterwards.

The 1000 chemicals which are now examined will also be labeled with a declaration on environmental impact. The study will be international within OECD.

Presently we outline how to split up the work. The countries will each take on a group of chemicals. Then we avoid double work, according to a very satisfied Kerstin Niblæus.

BIO-PROBE COMMENT: As it appears that all the Common Market countries will be working together on solving the hazardous chemical problem, Sweden's action to ban amalgam could have a very wide impact!!!

PRESS RELEASE FROM THE CENTER PARTY PARLIAMENT GROUP 1989-09-26

NO amalgam after 1991!

The use of amalgam as a dental filling material must cease. Amalgam contains mercury. This is dissolved into the human body and causes physical and psychological damage. Alternative materials are already present. With intensified research there will be satisfactory materials in about a year. By stating a time limit for amalgam, developments will come faster. Therefore parliament should prohibit amalgam from 1992!

The above stated conclusions are based on the amalgam report which has been prepared by a working group from the Center party parliament group. The members have been Marianne Andersson, Bertil Fiskesjö, Rosa Östh and Jan Hytting. The report was presented by Marianne Andersson this Tuesday.

The debate on amalgam has a long international history. Already when mercury in amalgam was introduced in the USA 1830-1870, opposition was strong. In Sweden "oral galvanism" appeared under the 1970ies. The debate in the 80ies has more and more focused on the risk for mercury poisoning.

Health problems associated with amalgam in dental fillings is e.g. tiredness, lack of appetite, infections, joint- and muscle- pain, gastrointestinal and concentration disturbances. At higher levels there will be behavioral and personality changes. Also the immune system can be affected since certain white blood cells are reduced in number. Kidney affections have been shown.

The Health and Welfare Board appointed in 1985 an expert group which had to examine the risk with low-level exposure to mercury. The expert group determined that amalgam is an unsuitable dental filling material from a toxicological point of view and that it should be discontinued. In 1988 general directions were distributed. In these it is stated that no extensive amalgam work should be done on pregnant women. The reason was to reduce the risk for fetal damage.

The Health and Welfare Board also proposed a research program which the parliament supported. It is important to intensify research in order to develop and evaluate alternative materials. This is stated in the report from the study group. Methods to evaluate which materials the individual patient can tolerate must be developed.

The authors of the report point out that 300-400 dental materials are on the Swedish market. 260 of these are in the product registry. The question of the reliability of the registration has been examined.

The authors base their opinion on the views of the Health Board and consider the deficits so obvious that a special register for dental products should be established. The registration should be handled by the Health Board and not by the Chemical Inspection. The register should be supplemented with side effects documentation. An expert group should follow-up and analyze side effects. One should also study if the use of dental materials is covered by the law on chemical products or if new laws are required.

The report emphasizes respect for the patient. Too many patients have experienced the opposite. To change this requires e.g. information to health personnel about amalgam and new methods of treatment. Since poisoning is a medical problem, we suggest that the local county health authorities appoint special physicians for this patient group. The dental care laws should have an additional paragraph that the dentist has, as far as possible, to comply with the patient's wish for treatment with alternative dental materials. Regarding costs, the study group proposes that the patient should have a free exchange if the symptoms are most likely caused by amalgam fillings.
The report also brings up occupational health problems in relation to amalgam handling. Dental personnel, working with the substance, should have the right to annual health examinations. Regular control and better measurement methods are required for an evaluation of mercury in laboratories.

Translated by Mats Hanson Ph.D.
Mobilization test for environmental metal poisonings. M Daunderer, M.D.

Medical Laboratory Section:

Earlier depots of heavy metals in organs could only be measured in autopsies. Now, there is a practical method to verify these by giving a heavy metal antidote and measure the urinary concentration. Normally levels in blood and urine only give information on recent uptake of poisons. Mercury from amalgam fillings, for instance, with a half-time of 50 days, will be accumulated in the brain and cause migraine-like headaches. Lead, with a half-time of 30 days will accumulate in bone-tissue and lead to anemia.

Measurements of levels of environmental toxic compounds in blood or spontaneous urine will give no proof of the existence of a poisoning and organ damage after long-time uptake.

The Desferal test has therefore earlier been used to mobilize iron in cases of iron-storage disease.

Examples:
1. 30 year old patient, with 6 years of severe migraine, abdominal pains, nervousness. Hg in spontaneous urine 11.2 ug/l (maximum allowable concentration 4 ug/l). After 250 mg DMPS (Dimaval) i.v., urine Hg 2565 ug/l.
2. 45 year old patient with 3 years of extreme tremor and inability to eat. Cu in spontaneous urine 61 ug/l (max 50 ug/l), after 250 mg DMPS (Dimaval) urine Cu 8426 ug/l.
3. Patient with arsenic symptoms. Spontaneous urine 5 ug/l. After 250 mg DMPS (Dimaval) i.v. urine arsenic 140 ug/l.

After treating about 1000 cases, the following procedure has proved useful:

**Dimaval test:**
1. A sample of spontaneously voided urine (50 ml)
2. Immediately afterwards injection of 4 mg/kg body weight (250 mg for 70 kg) DMPS (Dimaval) intravenously.
3. After 30 minutes, a second urine sample.

**DMPS**

DMPS ("Dimaval", since 1957 in the USSR "Unithiol") is a weak toxic substance (300 times less toxic than Sulfaactin (Dimercaprol)) and has so far shown almost no side effects. The effect, after i.v. injection, takes place after 17 minutes. Orally the absorption is about 30% and the effect is after 30-45 minutes. Up to now there have only been a few cases of allergic skin reactions.

Maximum allowable concentrations:

<table>
<thead>
<tr>
<th>Poison</th>
<th>ug/l in urine after DMPS i.v.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>25</td>
</tr>
<tr>
<td>Lead</td>
<td>50</td>
</tr>
<tr>
<td>Copper</td>
<td>300</td>
</tr>
<tr>
<td>Manganese</td>
<td>10</td>
</tr>
<tr>
<td>Mercury</td>
<td>50</td>
</tr>
</tbody>
</table>
These levels are only relevant for the measurement after the first mobilization, not if the substance has to be given again after assessment.

There is also a heavy metal depot if the measured value after mobilization is more than ten times the value before. In such cases the mobilization to reduce the levels should be administered monthly to every third month, according to the symptoms for each poison.

In cases of chronic poisoning, the antidote should be given repeatedly until the levels in urine have become normal.

**Other Antidotes**

1. Dimercaprol (Sulfactin): elevates arsenic and mercury in brain (contraindicated). [Bio-Probe Note: Dimercaprol was previously called British antilewisite (BAL)]
2. D-Penicillamine (Metalcapase, Trolvol): caution by penicillin allergy. Possibility for granulo- or thrombocytopenia, severe kidney insufficiency.
3. Na-Ca Edetat (Calciumedetat): Cases of nephrosis with anuria observed.
4. Ca-Trisodiumpentate (Ditripentat): Fever, exanthema, thrombocytopenia, nerve- and kidney damage observed.
5. Desferoxamin (Desferal): Reduced blood pressure.

Substitution

To enhance elimination of poisons and to compensate for losses during chelation, zinc should be given (zinc aspartate).

**BIO-PROBE COMMENT:** At last - A documented method to evaluate the effects of chronic exposure to mercury

**Mercury poisoning from amalgam. Major symptom: Headache.**


**Toxicology Section:**

Dentists are confronted with the symptoms of patients with amalgam fillings since many years. Since the mercury levels were only elevated to 5-40 μg/l in urine in the first few days after placement and then clearly dropped, the thought was that it could be a hypersensitivity reaction.

However, a number of patients reported in the anamnesis very clearly that months to years after the placement of several amalgam fillings, a story of sufferings began. After placement of more fillings or after not more than 10 years the symptoms clearly got worse. This happened not only to patients with additional gold- or metal prosthetic work where already because of electrochemical reactions one must expect increased metal absorption together with unpleasant local reactions. Even after the removal of the amalgam fillings, the problems reduced first after years. We will here report on 200 patients who had 1-22 fillings for a mean of 8 years. Clear problems started after about 6 years.

**Amalgam**

Amalgams are produced by mixing about equal amounts of alloy powder and mercury.

Composition of the alloy powder:

<table>
<thead>
<tr>
<th>Element</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag</td>
<td>40%</td>
<td>32%</td>
</tr>
<tr>
<td>Sn</td>
<td>30%</td>
<td>3%</td>
</tr>
<tr>
<td>Cu</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

(Values in % weight)

The hardened amalgam consists mainly of the original phases Ag₃Sn, Cu₃Sn and often Cu/Ag Eutecticum and the reaction phases of Ag₅Hg₄ and Cu₃Sn₆ and little or none of the Sn-Hg phase.
Both during placement and removal of amalgam fillings there will be increased release and organ accumulation of all metals and consequently a chronic poisoning.

Main Symptoms:
Headaches (migraine-like) the most common (85%)
Sleep disturbances
Memory disturbances
Nervousness
Tremor
Depression
Gastritis
Colitis
Infection prone
Allergy

Especially hard affected will nervous patients be since they react especially strong on nerve poisons. Also patients with vasoactive headaches.

In contrast to acute mercury poisoning there will in the first 10 years, be no increased nerve conduction and no kidney insufficiency. There are no studies on increased risk of cancer, embryotoxic and teratogenic effects.

For differential diagnostic purposes, other sources of mercury poisoning must be investigated, e.g. extreme consumption of sea-food (tuna fish, crab, mussels).

Effects

Absorbed mercury will mainly be bound to sulphydryl groups of proteins. The uptake in brain takes place more slowly than in other tissues, reaches however there the highest values and has a half-life of 18 years in contrast to 70 days for other tissues. Only a minor fraction of absorbed mercury is excreted in the kidney and intestines. The rest goes into depots where the CNS is clinically especially important.

Even after removal of the amalgam filling and without chelation, the symptoms of poisoning very slowly reduce. In treated cases migraines, for instance, completely stopped in about 4 months.

Effects of DMPS

DMPS, in contrast to all earlier chelators, reduces the accumulated mercury in the brain, also when the starting blood- and urine values are with normal limits (normal up to 4 ug/l in urine). The effect is only extracellular. Therefore, detoxification is only possible by diffusion.

When after giving DMPS (1 ampule 250 mg i.v.), the urine value increases to more than 50 ug/l, it is definite proof of the accumulation of mercury in organs and brain. The elimination can be carried out successively, e.g. every 4th week. The therapy can also be necessary several years after amalgam removal. After repeated DMPS administration, the substitution with zinc aspartate and possibly iron is necessary.

Procedure
1. Spontaneous urine for Hg-measurement
2. 4 mg/kg DMPS i.v. (Dimaval) - Children 10 mg/kg capsule orally about 20 ml of next urination.
3. Measurement of Hg, Cu and Sn.
4. Repeating the procedure if:
   • Every fourth week if Hg 100 ug/l.
   • Every third month if Hg 50 ug/l.
   • Otherwise after 6 months.
   • If Hg 1000 ug/l one capsule every week.
Toxicity

More dangerous than narrow, deep fillings are occlusal fillings with a large surface area. One large amalgam filling gives after chelation levels of 40 ug/l for each year of presence. Our experience is that values over 50 mg/l give neurological disturbances like headaches and nearasthenia.

More than 10 fillings(--> up to 2565 ug/l after DMPS) leads generally to tormenting problems.

Environmental toxicology

At least 13% of the mercury in refuse water originates from dental clinics (Berlin). 100 dental clinics in Hamburg dump 0.4 tons of mercury every year into the water.

BIO-PROBE COMMENT: WITH THE EVER INCREASING CONTAMINATION OF RIVERS AND LAKES IN THE U.S. RECEPIENTS OF THIS NEWS LETTER SHOULD MAKE EVERY EFFORT TO BRING THE DATA ON BERLIN AND HAMBURG TO THE ATTENTION OF INVESTIGATIVE REPORTERS AND RESPONSIBLE STATE ENVIRONMENTAL OFFICIALS.

Summary

In contrast to not decisive determinations in blood or urine which give no information, the evaluation of values after giving DMPS once, gives an estimate of accumulated mercury depending on number and age of amalgam fillings. Values up to 2565 ug/l were found in urine. With urine values over 50 ug/l, typical neurological problems might occur, the most common ones are migraine-like headaches. The symptoms will disappear after repeated administration of chelator. The insurance system will pay for the exchange of gold inlays after mobilization test and character-like poisoning symptoms. Since mercury is toxic during handling and occupational processes, avoiding exposure is preferred.

Conclusion

Amalgam fillings should not be placed today. When a number of old fillings are present together with headaches and nervous symptoms, a DMPS chelation should be carried out again after amalgam removal. If needed, additional therapy should be used.

Additional Information from Dr. Daunderer not previously published.

Amalgam fillings - malpractice

Case reports.

1. A 9 year old girl had 5 amalgam fillings in one year. Within one year and a fall on her head severe encephalopathy developed. The EEG became flat. She was extremely agitated, had rhythmic seizures and lost contact with her surroundings. She had to be fed parenterally. Hg in spontaneous urine 18.5 ug/l. After 3.5 mg/kg DMPS orally, urine Hg 213.5 ug/l.

   In her hair Hg-levels were elevated 6 times. During a seven month treatment with DMPS (100 mg/week orally) the poisoning symptoms slowly reversed. Substantial improvement did not occur until the amalgam fillings had been removed.

2. 30 year old female patient had since several years constant migraine attacks and pain in the lower abdominal region. Since her dentist blamed the amalgam fillings they were exchanged for 11 new amalgam fillings. The problems became immediately worse. Hg in spontaneous urine 11 ug/l. After 3 mg/kg i.v. DMPS 2565 ug/l. Headache and abdominal pains disappeared rapidly after the chelation and reappeared in milder form after 6 weeks. After removal of the fillings and repeated chelation the patients symptoms disappeared.

3. A 33 year old female patient with 14 amalgam fillings since 25 years (partially renewed) felt since 3 1/2 years old very tired, depressed and had constant vertigo, sick-feeling, headaches, concentration- and capability disturbances, paresthesia, increased infection sensitivity. She complained about either taste and bad smell, abdominal pain, diarrhea, paroxysmal arrhythmias and tachycardia. She developed a candida bronchitis, asthma bronchial and nickel allergy. Hg in spontaneous urine 7 ug/l. After 250 mg DMPS i.v.: Creatinine 1.36 g/l, Pb 121 ug/l, Cu 2493 ug/l, Hg 2794.3 ug/l (limit after chelation up to 50 ug/l according
to our experience). After detoxification by chelation and removal of amalgam fillings, considerable improvement.

4. A 64 year old patient with 21 amalgam fillings-----after zinc therapy Hg in urine more than 5000 ug/l and normalized after 2 years with continuing zinc. The patient then felt healthy. After an implantation in the lower jaw after 8 years there was a renewed excretion of mercury from depots in the jaw. Spontaneous level 20 ug/l. After 250 mg DMPS i.v. 22,579 ug/l. Till demonstrated the high levels of mercury in bone tissue.

**Own Observations**

During studies of the question whether amalgam carriers with neurological problems always show a mercury dumping after chelation with DMPS we found in up to now 800 patients:

---Patients who never have had amalgam fillings showed values to a maximum of 20 ug/l after 3 mg/kg DMPS i.v. and no special increase in chelated copper.

---Patients who regularly ate sea food, especially tuna fish and crab, had a maximum of 50 ug Hg/l urine 30 minutes after 3 mg/kg DMPS i.v.

---98% of patients with amalgam fillings or recently removed fillings had over 50 ug/l Hg in urine after chelation and also a significantly elevated copper excretion with values over 500 ug/l Cu in urine. Rapidly after removal of fillings and chelation the symptoms reduced considerably.

---Patients with the most severe symptoms generally showed considerable zinc deficiency, elevated copper excretion and also cadmium and lead excretion. This load, in addition to exposure to wood preservative (pentachlorophenol, Lindane) to an enhancement of the neurological organ damage.

---The degree of poisoning symptoms is not only determined by the number of fillings but primarily also by the zinc status which is in the first line of detoxification of heavy metals. Copper is antagonistic to zinc and potentiates, as do other toxic substances, the neurological problems.

---Primary symptom of amalgam poisoning: Apathy, tiredness, headache, abdominal pain, muscle and joint problems, memory disturbance, depression, sleep disturbances, susceptibility to infection.

---A sudden onset of symptoms during an infection (zinc deficiency!) after a latency of years.

---Zinc supplementation enhances the excretion of extracellular mercury. However, not from depots.

---We have seldom diagnosed selenium deficiency.

---Many cases of colitis (ulcerative) and some with multiple sclerosis improved considerably after removal of the amalgam fillings and detoxification with DMPS.

---The type of amalgam does not seem to have any relation to the severity of symptoms.

---Because of the amalgam-induced mercury poisoning and the ensuing zinc-deficiency other poisonous heavy metals like lead and cadmium and also arsenic will be retained in the body to a higher degree.

---As long as the amalgam fillings remain in the mouth, the symptoms reduced only temporarily after chelation therapy. Final recovery was achieved only after amalgam removal.

---Mercury from amalgam can be differentiated from mercury from other sources by a fair degree of certainty by:

1. Determination of other amalgam components in addition to Hg (Cu, Ag, Sn).
2. The appearance of symptoms in connection with the placement of amalgam.
3. The extremely high levels in depots which only occur after continuous poison release.
4. The rapid improvement of the clinical picture and the T-helper reduction after amalgam removal.

Other cofactors for increased Hg-release from amalgam fillings:
Frequent hot drinks, acid food, fluorine-containing toothpastes, chewing gum use, bruxism, other metals and the already mentioned zinc deficiency.

In severe cases we also found a clear T-cell depression which disappeared after amalgam removal.

Up to 20 years after removal of amalgam and persistent symptoms, a depot could be found and treated.

**Procedure**
After a number of tests, a practical procedure for a insurance-connected physician has been worked out. 
1. Spontaneous urine I: measurement of zinc and possibly nickel (in addition to Hg)
2. Injection of 3 mg/kg of DMPS i.v. slowly.
3. After 30 minutes, urine II for mercury and copper (+lead if blood pressure is high and cadmium for osteoporosis).

Orally the chelator is unreliably absorbed. 10 mg/kg in one single dose after fasting.
The capsules are available and allowed since 13 years as Dimaval. Our first case was treated in 1976 (Arsenic poisoning) successfully.

Any physician should be able to use the treatment before and after the removal of amalgam and record the symptomatology. We send our urine samples to a respectable laboratory.

Evaluation:
Environmental poisonings must always be evaluated with consideration to interactions with other poisons like copper, lead, cadmium, wood preservatives, dioxin, zinc deficiency, length of exposure, underlying diseases, acquired diseases like allergies etc.

After 3 mg/kg DMPS at more than 50 µg/l Hg there was always an improvement in neurological symptoms. This should therefore be considered a MAC-Value unless a too high copper excretion complicated the evaluation.

After high copper excretion there will often after re-chelation after 6 weeks be still 50% of the Cu values and therefore also a higher excretion of the other heavy metals. Chromium and nickel will be retained if the copper excretion is high. Cadmium is excreted in large amounts during zinc deficiency.

Legal Consequences:
1. Even if the observed cases were isolated cases (everything contradicts that) the severity of the observed side effects and the impossibility of preventing them, prohibits any further use of dental amalgam which contains mercury.
2. Gold as an insurance-paid alternative must be acknowledged for poisoned patients as well as for allergic patients.
3. Compensation for severe demonstrated cases must be possible (funds?).
4. All dental materials must be tested for long-time effects according to the drug-laws (non-noble alloys, indium, gallium, vanadium, nickel, beryllium, synthetic materials, formaldehyde in root-fillings, etc.).
5. Dentists, family doctors, neurologists must as soon as possible be informed about the various poisoning symptoms and possible treatments.

Open Scientific Questions:
• Immunodeficiency caused by amalgam: are fungus infections, virus diseases, multiple sclerosis, ulcerative colitis, rheumatic problems, etc increased or induced?
• Mercury is teratogenic: Can these concentrations cause fetal damage?
• Mercury is mutagenic: To what degree at these concentrations?
• Mercury in bone under amalgam fillings in autopsy material?
• Irreversible damage (malformation, neoplasms, M.S.).

Resume:
The prohibition demanded in the USA in 1840 for the use of Hg-amalgam for dental fillings was clearly well founded and was unfortunately in 1855 taken back because of industrial pressure since the scientific demonstration of depots was lacking. Amalgam fillings should immediately be considered malpractice.

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ABSTRACTS


Mercury release from dental amalgams has generated considerable concern in recent years. The purpose of this study was to determine mercury release from three amalgam systems.

Seven specimens, each measuring 8.0mm in length and 4.0mm in diameter with a surface area of 1.256 cm², were prepared from each of the three dental amalgams: one admixed high-copper amalgam (Contour); one lathe-cut low-copper (SDI); and one supposedly non-mercury-releasing amalgam (Composil). After setting, each specimen was washed three times by vortexing in 10 ml of purified water at 37°C for 24 hours. At each 24-hour period of incubation, assay of mercury content was carried out using atomic absorption spectrophotometry. Findings showed that all specimens released variable quantities of mercury throughout the 4-week period of study. The overall mean amount of mercury released from Contour, SDI and Composil was 0.53, 0.64 and 410 ug/cm²/24 hr respectively. The difference in means between Composil and Contour or SDI is highly significant (p) Composil released significantly more mercury than Contour or SDI.


Polishing of amalgams is a process which generates friction and heat. The present study was conducted to investigate the effect of polishing on the mercury release of amalgam restorations.

Amalgam restorations of 25 patients were polished with amalgam polishing cones (Shofu) and oral mercury level was directly measured with a gold film mercury vapor analyzer (Jerome). The measurements were taken directly before and after polishing, after 24 hours, 7 days, 1 month and 3 months after polishing. A few readings were also taken during the polishing procedure.

According to the measurements directly before and after polishing, it appears that polishing drastically increases the mercury levels (from 0.005 mg Hg/m³ before polishing to 0.124 mg Hg/m³ after polishing). According to the measurements taken during polishing, the effect of polishing was even more dramatic (0.914 mg Hg/m³). Within 24 hours the mercury levels were found to return to the readings obtained before polishing and these values remained constant at the 7 day, 1 month and 3 month follow-up investigations. Although the number of restorations, the restorations surfaces and polishable surfaces have no statistical significant effect on the level of the mercury readings before polishing, the polishing process did however influence the mercury level significantly.

According to the above mentioned results, it can be concluded that the polishing of amalgams causes a brief, but sharp, rise in the oral mercury vapor levels.


This study was undertaken to ascertain the presence of undetected arrhythmias in a population of dental professionals. The results also served as a follow-up study to correlate with data from an earlier study performed on a larger population in multiple health care settings.

A portable EKG-3 lead unit (Vitel-III-EKG system) was used to obtain a one-minute record. This was transmitted via telephone to a cardiac technician or nurse trained in EKG interpretation. A cardiologist overread each report.

The results were compiled from 1166 (1002 male and 163 females) dentists who participated in the ADA Annual Health Evaluation Program in Washington, D.C. at the 1988 ADA/FDI World Dental Meeting.

The data was consistent with earlier study in that it revealed that 14% of those dentists screened had an abnormal EKG showing one or more arrhythmias, while 4% screened were identified as having an arrhythmia that needed further medical follow-up. Two dentists were hospitalized with potentially life-threatening disorders that had not previously been diagnosed.

The results underlined the positive application of EKG screening of populations for updated arrhythmias suggestive of underlying potential heart disease.

Our previous 2 year studies of experimental amalgam tattoos showed Hg release and subsequent accumulation in the kidneys as mercury and selenium containing (HgSe) deposits localized in proximal tubular cells. Peak, mean renal cortical Hg levels of 263 ug/g were reached after 1 year. The aim of the present work was to compare the renal condition of guinea-pigs implanted for longer periods with controls. Using N2O, O2 and ether anesthesia, 4 guinea-pigs were subcutaneously implanted with 2x25mg of powdered amalgam for 2, 2.6, 3 and 4 years. Under neuroleptanaesthesia, the left kidney was surface fixed for electron-microscopy and X-ray microanalysis. Sections of both kidneys were examined by light microscopy and the remainder analyzed for Hg by atomic absorption spectrophotometry. Control kidneys were normal and had mean cortical Hg contents of 0.1 - 0.113 ug/g. The mean cortical Hg of implanted animals fell from 111 ug/g at 2 years to 24 ug/g at 4 years. The number of lysosomal and nuclear HgSe deposits corresponding reduced. The kidneys of animals implanted for 2 and 3 years were otherwise normal, whilst those implanted for 2.6 and 4 years were small, pale, hard and lobulated. Microscopically, some areas of these kidneys were degenerate with nephrons replaced by fibrous tissue and cystic cavities. A tumor of the common bile duct in the 2.6 year animal and supra-renal tumor in the 4 year animal were present. 1 control animal had an epidermal tumor. There was an appreciable fall in renal mercury in implanted animals between 2 and 4 years. The renal pathology in 2 implanted animals may have been a consequence of either mercury toxicity or age related malignant tumors.

This data appeared in the Winter Park Memorial Hospital Newsletter Prime Life Vol 3, Issue 6, Winter 1988.

Having oral surgery? Take some vitamin C and smile!

Vitamin C appears to promote healing after oral dental surgery, according to a study of 452 dental patients in Miami.

The patients ranged in age from 11 to 77, and after tooth extraction, 237 patients took 1,000 mg of vitamin C daily, while 40 took 500 mg and 175 took none. After one week, they were examined and it was found that those taking vitamin C healed more rapidly without showing any side effects of vitamin C overdose.

Further research indicated that only one percent of patients who took vitamin C experienced a surgical complication known as dry socket, compared to six percent of the other patients.

The researchers’ report in the Florida Scientist stated that the vitamin may work by stimulating the immune system and hastening proper formation of scar tissue.

The following was provided by Shirley Brown, DAMs Colorado.

Rocky Mountain News, April 15, 1989, Denver, Colorado by Rebecca Cantwell, Staff Writer.

An Arapahoe County well being used to test the possibility of recharging underground water supplies for the metro area has been temporarily shut down because mercury leaked from its pump.

...but state health authorities were surprised to find that nine pumps in the district had mercury in their seals..."Mercury’s been used for years (in seals) but there’s a tendency to get away from them," said Jerry Biberstine of the state health department.

Biberstine said no knows how many drinking water pumps in the state have mercury seals, but he’s never before heard of one breaking...The Willows well was shut down in late February after workers noticed five globules of mercury on a pump house floor while they were pumping water out of the well, officials said.

The pump’s seal is being replaced with a mechanical one, and the well will be out of service for a couple of months, predicted board member Dee Wisor.

The district is planning to replace the remainder of its mercury seals eventually, he said.
Inom kort kommer alla företag som kallar sina varor "miljövänliga" att få besök av kemikalieinspektionens inspektörer. Foto: SVEN-ERIK SJÖBERG

"Snabbt förbud mot amalgam"

Frågan är inte om, utan när vi förbjuder amalgam, säger chefen för Kemikalieinspektionen, Kerstin Niblaeus.

I veckans översändade inspektionen en lista till regeringen med tio farliga kemikalier som man vill ha bort.

På den listan finns kvicksilver med; ett ämne som ingår i amalgam. Förbud mot amalgam är ett beslut som regeringen måste fatta, men Niblaeus är säker:


Troligen kommer inte termen "miljövänlig" att få användas längre inga av produkterna är nämligen miljövänliga i ordets rätta bemärkelse. Den nya benämningen blir "miljöanpassad".

Sidan 7
**Kemikaliespionage skärper tonen**

**Amalgam förbjuds**

Av ERIKA BJERSTROM

Amalgam är en av flera produkter som kemikalieinspektionen vill förbjuda. Taktiken att rensa upp kemidjungeln ska åka. Polismyndigheten har ett nytt medel i kampen.

Med nuvarande furt kommer det att ta 10 år innan de förbjudna ämnena är borta. Det är inte acceptabelt.

Det avväger Kerstin Nilbeanus, generaldirektör för kemikalieinspektionen.

- Hittills har vi förbjudo en fast anställning av om året. Först kvällen, sen tisdag och nu freons. Med den taken tar det alldeles för lång tid, eftersom vi redan nu känner till 30-100 kemikalier som vi vill ha bort, konstaterar hon.

20 000 kemikalier


I början verkade kvaliteten vara för stark men nu anses inspektionen detta innehålla strategi inför 90-talet.

Vid veckan överfördes kemikalieinspektionen en lista till regeringen med 10 farliga kemikalier som man vill att bort.

Om en månad kommer en lista med 35 kemikalier till. Vilka är de är på en långt hemlig.


Amalgam innebär kvicksilver, en av de tio kemikalier på den sida av listan.

- Prag är inte om, utan när vi förbjudit amalgam, sår Kerstin Nilbeanus.

Kvicksilver bryts inte ner i naturen. I stället lager det och orsakar skador på vård- och djur. Dessutom har det framkommit att kvicksilver i amalgam kan orsaka sjukdom hos osynliga människor.

- Ett beslut om förbud måste fallas av regeringen.

Tror du att regeringen kommer att godkänna förslaget?

- Jag har inte ens tänkt tanken att den inte skulle göra det.

Utöver kvicksilver finns också på listan kemtvättarnas tetralenbetydande, ett ämne som används som vätskvalitativa.

- Det är ett klorerat kolvåta med många negativa miljöefekter.

Användningen har ökat eftersom kemtvättarna hittills använt freon (CFC). Eftersom freonet ska bort har tvätterier återgett till en annan miljöfarlig produkt, konstaterar Kerstin Nilbeanus.

I detta läget får man fråga sig om det verkliga är nödvändigt med tvätterier, anser hon.

Oändliga användningsområden för kemikalier måste upphävas.

Retade EG

Med det uttalandet sticker hon medvetet ut huvudet.

- Kemikalierna har tillkommit för att göra vårt liv mer bekvämt. I många fall störer kemikalierna om arbetsmoment som vi får utföra manuellt. Maskindelsmedel och propellsat är två exempel.

I stället för att vi diskar för hand eller renser avloppet frater kemikalierna bort smutet. Problemet är ett samtidigt förstörte miljön.

Kemikaliespionage nya policy har retat EG-kommisionen i Bryssel.

Nyligen förbjöds kemikalien paradiklorbensen som används i doftsprutor. En onytkproduct, ansåg inspektionen och förbjöd den eftersom ämnet massivt orsakar cancerframkallande.

- Men vi fick kritik från EG. Där anser vi att det inte var vår jobb att avgöra vad som är nödvändigt eller ej för konsumenterna, säger Kerstin Nilbeanus.

- Dessutom ville EG ha bevis på att ämnet orsakar cancerframkallande. Men vi stod fast vid beslutet. Enligt svensk lag är det möjligt att förbjuder att ämne om det "på skäl grund" misstänks vara cancerframkallande.

"Städa i stället!"

- Lite uppfriskningar måste vi vara beredda på. I stället för att ha doftsprutor i toaletter kan man faktiskt städa ordentligt, tilläggar hon.

Den beta miljödebatten har drivit upp arbetstempot på inspektionen. Just nu förbereder sig verket två inspektörer på att börja granska alla företag som säljer "miljövänliga" varor.

- Utvecklingen går oerhört snabbt och det här nya fenomenet måste granskas, konstaterar Karin Thorin, chef för inspektionen. Hon är själv biokemi och underhåller hon sin hov inspectorer.

Ett 30-låt förteckning "miljöpo- lerna" besökte för att undersöka de do varor som marknadsförs såsom miljövänliga.

Trots det kommer inte tusen miljövänliga att få användningslängre. Inga av produktionen är nämligen miljövänliga i ordets rätta mening, sier hon fast.


- Kemikaliespionage har lanserat många myndigheter, tillstå Kerstin Nilbeanus.

Nu står hon ut en strategi som ska göra städarbetet effektivare.

Kemikaliespionage kommer att koncentrera sig på 1 000 utvalda gamla kemikalier. Dessa återfinns i 95 procent av alla kemiska produkter. Av dessa ska 150 studeras närmare, många varsliga kemikalier finns det förbjudsvarvare litet kunskap om. Aeroton är ett exempel.

Företag som bryter mot lagen om kemiska produkter ska polisinspektera.

**Effektiv metod**


Från 1990 ska inspektionen "handhavagranska" alla nya produkter. På så sätt slipper man städa upp efterhand.

De 1 000 kemikalier som nu står ska dessutom föreses med en beskrivning hur de påverkar miljön.

Kartläggningsen ska tolkas internationellt, inom ramen för OECD.


**FOTO: SVEN ERIK SJÖBERG***
Inget amalgam efter 1991!


Debatten om amalgam har en mångårig internationell historia. Redan vid introduktionen i USA av kvicksilver i amalgam 1830 - 1870 restes starkainvändningar. I Sverige väcktes frågan om "oral galvanism" under 70-talet. 80-talets debatt har dock allt mer fokusrats på risken av kvicksilverförgiftning.

Hälso problem förknippade med kvicksilver i tandfyllningar är bl a trötthet, aptitlöshet, infektioner, led- och muskelvärv, mag-tarm-störningar och koncentrationsstörningar. Vid högre koncentrationer tillkommer beteende- och personlighetsförändringar. Även immunförsvaret kan drabbas genom att vissa vita blodkroppar minskar i antal. Påverkan på njurfunktionen har påvisats.


Socialstyrelsen lade också fram ett forskningsprogram som riksdagen ställde sig bakom. Det är viktigt att intensifiera forskningen med inriktning att utvärdera och vidareutveckla alternativa tandfyllningsmaterial. Det framför i arbetsgruppens
rapport. Metoder för att fastställa vilka material den enskilde patienten tål måste utarbetas.


Rapporten tar också upp arbetsmiljöfrågor i samband med hanteringen av amalgam. Tandvårdspersonal som arbetar med ämnet bör ges rätt till årliga hälsoundersökningar. Regelbundna kontroller och bättre mätmetoder efterlyses för att kartlägga kvicksilver i laboratorier.