

Name Poul Møller, private, retired, completely independent.
Title Master of Science, Chemistry.
Postal address Augustenborggade 21 B, 11th floor, DK-8000 Aarhus C, Denmark.
Telephone number + 45 86 11 63 11
e-mail poulmoeller@stofanet.dk

To the Independent Scientific Committee dealing exclusively with scientific risk assessment aspects of amalgam. Deadline June 4, 2007.

The following contribution is an update of the letters sent to Commissioner of Health during the last 2 years and to the Green Paper consultation. I appreciate that this SC is independent.

BASIC STATEMENT.

True science of amalgam is the study of how Nature has programmed us to move mercury, Hg, in our body, accumulate it, react it with vital substances and as a logical and biological consequence: The outbreak of the epidemic of man-made chronic diseases experienced during the latest decennia. Nature reigns supreme and does not care whatsoever of the opinions of physicians, dentists or authorities.

Nature dictates: Hg is NOT fixed in the fillings. It is released to the blood and moved all over the body to accumulate in the brain, the central and the peripheral nerve systems (-> allergy), liver, lungs, pancreas, testes and more. It forms free radicals abundantly, reacts violently with cystein-containing proteins, e.g. enzymes and DNA, and is transformed to organic, cytotoxic methyl-Hg able to penetrate protecting barriers in cell walls, blood/brain, blood/retina, placenta and mammary glands. A minor amount is excreted.

This is in glaring contrast to the views of the medical society preferring its own methods to exact science. Amalgam is claimed safe due to low Hg-values in urine and blood. However, these are for transport only. They may trace acute poisoning, but never Hg accumulated in the body. When do medicine suspect that the epidemic of chronic diseases and the modest results of multi billions \$ research do require new thinking and questioning of the taboo of amalgam?

Recently specific connections between genes and diseases have been discovered. Is it not surprising that genes developed for 100.000's of years should change suddenly in great numbers during a few decennia? Do scientists find Hg-demolished genes?

For over 150 years amalgam has been used for dental fillings. For over 150 years dentists and physicians have not been educated to understand, that the former poison patients and staff chronically, and non-resistant individuals get chronically sick over time. To defend it because of its use for 150 years - even without any toxicological control is nonsense. By dogmatically denying its disastrous toxicity universities are guilty, although all teachers have learned physics and chemistry at high school level.

Since the application of amalgam was systematized at the time of WW II its wide use has developed into the largest non-controlled experiment with humans as victims of the most severe toxification of the Western population ever.

It will be a triumph for humanity, when authorities ban amalgam and start the enormous job of replacement, giving priority to patients that can be saved. Even though only their inflow of Hg is stopped, they will experience relief. The art of *correct* replacement is well-known, but a

massive effort to collect experience of detoxification and its science must be given highest priority - not to forget change of attitudes and re-education.

Ad 2.1 Human safety. The questions put forward by the SC are answered as follows

2.1.1 Dental amalgam

- 1. True science proves the link between amalgam and allergic reactions, neurologic and other health disorders.**
- 2. The use of amalgam is unsafe for all humans belonging to the non-resistant category. Of course pregnant women and children are at a particular risk, but they have already enough Hg in their bodies.**

CONTENTS:

A. The release of Hg from the fillings	page 2
B. The chemical aggression of Hg creates four tragic attacks.	- 3
C. On the resistance to Hg.	- 5
D. Three age groups with mental disorders are identified.	- 5
E. Surprising results of amalgam replacement.	- 6
F. The need of food supplements to Hg-poisoned patients.	- 6
G. Asking Google about experiments on animals.	- 7
H. Closing remarks.	- 7
I. List of symptoms and diseases of Hg-origin.	- 8
K. References.	- 8

followed by a few remarks on **Alternative materials** - 9.

A. The release of Hg from the fillings is extremely easy to prove. Analyses of 4-5 years old ones show a loss of 25% Hg, after 12-15 years 50% have gone. Tissues from surgery and autopsy should be analysed routinely!

a) The forensic autopsy studies by Guzzi et al. (1) show that Hg in the pituitary gland, cerebral and renal cortex and thyroid is significantly increased with the number of occlusal surfaces. The levels in the cases of suicide were about 3 times higher than in others. Although the number of patients is relatively small, the results confirm previous findings.

b) On www.iaomt.org (2) two DVD's show:

Even a 25 years old filling emits lots of vapour.

Nerve cells are struggling against death when attacked by tiny amounts of Hg. The myelin is peeled off; like the pathogenesis of multiple sclerosis shown on film.

c) Isotopic studies show quick migration from teeth to body in sheep, lamb and monkeys (3).

d) Instruments are sensitive enough to register Hg-vapour emitted by congress participants in large restaurants during coffee breaks (4).

e) Prof. Alfred Stock, Germany, demonstrated the open access to the brain when poisoning himself in 1936 (5). He inhaled 25 micrograms Hg-vapor through his nose and soon he got dizziness, headache and nasal catarrh, all of which disappeared after some days. Hg passed

the nasal cavity and the olfactory bulbs directly to the brain. When inhaling 250 µg through the mouth, no symptoms were observed.

Do dentists not learn anatomy? When drilling out fillings they breathe vapours and dust through the nose. High amounts have been found in their pituitary and thyroid glands, cerebral cortex and kidneys (6, 7a-c). A dentist of 30 years had 10 times more in her pituitary gland (7c). Brain tumours in dental staff were more than double (8), dentists had 10 times more kidney diseases (9) and dental assistants got reproductive disorders. Dentists are the profession with the highest rate of suicide.

f) Commissioner Mrs. Wallström circulated her strategy on Hg in 2004. In EU-15 1300-2200 tons of mercury have been placed in our teeth, i.e. 5 grams/capita. Even a few mg are highly toxic. Her department did not understand the impact.

Transplants of kidneys - the waste bin of Hg - are double that of all others together, heart, lung and liver.

Does any person in his senses actually accept teeth as the only safe place to store our most toxic metal only a few inches from the brain with open access?

Hg is released by evaporation, increasing with temperature, by friction, chewing, chewing gum! and bruxism and by corrosion, when a more noble metal is present at the same time, e.g. "gold". An electric element is formed and the less noble metal, Hg is released as Hg⁺⁺ at a 10 times higher rate. Due to cost a patient may have both metals present for years. Apart from friction Hg is released through all visible and invisible surfaces as the atom is smaller than the space between filling and toothbone. Hg moving out of invisible surfaces goes directly into the blood. Apart from 20% of Hg-vapor from the visible surfaces leaving with the expiration, it is condensed in the saliva and mostly transferred to the blood, where it oxidizes to Hg⁺ and Hg⁺⁺. The other amalgam metals also corrode.

Hg passes mucous membranes and the skin. The latter becomes urgent, as dental assistants kneading amalgam in their bare hands up to the 1980's to keep fillings at correct consistency are now fighting for their right to indemnification.

Once deposited the release of Hg is very slow; in nerve tissue half-life is over 25 years. When an attack on an organ exceeds the defence considerably for a longer time, a disease breaks out in that organ. It may happen anywhere. Toxicity is chronic and so are diseases.

The Nobel laureate in Medicine, 2004, prof. Richard Axel stated in his banquet speech: *We have to use the Sciences of Physics and Chemistry to understand the diseases.* A dawning recognition of an obvious truth.

B. The chemical aggression comprises four tragic attacks.

1) In a healthy person attacking free radicals and defending antioxidants are balanced. Heavy metals form hydroxyl radicals, the ones with strongest aggressivity. They are highly reactive, shortlived, split any substance hit setting it out of function. A long, large surplus is pathogenic Hg is the only permanent source of a surplus of free radicals causing the imbalance as antioxidants are not increased.

The Encyclopedia of Food Sciences (10) lists some 50 mostly chronic diseases plus ageing involving free radicals. The illnesses in par. I are also caused by free radicals.

2) Cysteine, our most abundant amino acid containing sulphur, perform key roles in catalysis, i.e. in the structure of active sites in enzymes. Also a frequent part of any protein, DNA, RNA and in some hormones. It is a tragedy that Hg attacks just cysteine so avidly. The sites are killed and protein folding disturbed, they are denatured. The second amino acid with sulphur is methionine. Disulfid-bonds ex two cysteines in enzymes, insulin, antidiuretic and growth hormones, DNA etc. get vulnerable to Hg when reduced to two SH-bonds.

Some enzymes contain selenium, e.g. glutathione peroxidase, important for recycling of this essential antioxidant. Selenium binds Hg even stronger than sulphur does. It may be used for detoxification.

3) Like other organisms we form the most toxic organic methyl-Hg, MeHg, by streptococci in plak on fillings and in the alimentary canal. It is cytotoxic and penetrates protective barriers **a)** the cell membranes, **b)** blood/brain --> mental disorders, **c)** blood/retina --> age-related eye diseases and **d)** blood/testes --> reduced fertility. It passes **e)** placenta and **f)** mammary glands to the developing brain of the foetus/infant exactly during its formation. The umbilical blood and breast milk Hg may hold up to 8 times that of mother's blood, demonstrated by isotopic analyses (3c). Poisoned mothers may suffer from reduced fertility, abortion and premature birth; may deliver children with birth defects, reduced IQ and other mental disorders, even diabetes-2 at school age. Chemistry is master, cp. thalidomide, Minamata. Thiomerosal, 50% Hg, often used to preserve vaccines, causes similar disorders in the new-born.

4) The eggs of a girl get polluted as formed during the pregnancy.

Do stem cells with MeHg stand the attack? No. Do gene-scientists hunt Hg-damaged genes? May be. Bacteria take part in the reactions and become resistant to antibiotics.

Different heavy metals impair health by synergy. Amalgam metals as silver, copper and tin act similarly to Hg. Some other extremely toxic substances in dentistry need public attention.

Prof. Maths Berlin, Sweden, headed the WHO-committee on mercury, 1991. He reported Medline 1993-2002 to his government (9):

“The safety margin thought to exist on Hg exposure from amalgam has been erased. Mercury is a multipotent toxin with effect on several levels of the biochemical dynamics of the cell, so amalgam must be considered unsuitable for dental restoration. This is specially true since fully adequate and less toxic alternatives are available.

With reference to the risk of inhibiting influence on the growing brain it is not compatible with science and well-tried experience to use amalgam fillings in children and fertile women. Every doctor and dentist should, where patients are suffering from unclear pathological states and autoimmune diseases, consider whether side-effects from mercury released from amalgam may be contributory to the symptoms”. An unusual recommendation.

In Oslo he said: The risks of using amalgam are too high. The toxicological profile of the adverse effects on the CNS is nasty enough to motivate the exclusion of amalgam (11).

C. On the resistance to Hg. It is supposed that ca. 20% are non-resistant. Chronic diseases mostly appear at higher age, and 20% of the population equals about half those older than 55.

Norwegian scientists of Univ. of Bergen have reported tests where stored Hg was mobilized by an IV-injected chelator dimaval (dimercaptopropanesulfonate) in 4 groups of around 20 each: 1) controls without amalgam experience, 2) healthy controls with amalgam fillings, 3) with self-reported symptoms from existing fillings, 4) patients who had removed their fillings. “Subjects with no amalgam experience had the lowest Hg-values. There was no significant difference between the 3 groups with such experience, *neither between the healthy group and the one with self-reported symptoms from existing fillings*. Patients with symptoms allegedly caused by amalgam were not different from the control groups” (12). Patient having removed their fillings still have Hg at high levels in accordance with the extremely slow excretion.

If this research is representative it seems as if healthy amalgam bearers carry the same load in the body as sick ones. Why are vital substances attacked in some individuals, not in others? It might be for genetic reasons, e.g. my wife and our son are non-resistant, our daughter and I are resistant. The problem of resistance ought to challenge many scientists. It will help in case of other heavy metals, lead, copper (Parkinson), cadmium, manganese etc.

Prof. Boyd Haley, Univ. of Kentucky, has done a huge research on Hg toxicity, including Alzheimer’s Disease. He correlated the onset of AD with apolipoproteins E2-4 with 2, 1 and 0 cysteines, roughly > 90, 70-90 and < 70 yrs. (13).

A hypothesis: Resistant people have enough metallothioneins to carry Hg that it does not reach vital parts of the body. Small proteins with 22 cysteines binding up to 22 atoms of Hg each and are normally produced on demand to manage the tiny amounts of heavy metals we need for life. Other substances in plasma do the same, i.a. glutathione, uracil and the like. Every single atom of Hg is a poison.

D. Three age-groups with mental disorders are identified. In spite of serious warnings by Prof. Alfred Stock (5) the Nazis began to systematize the use of amalgam and the idea spread to Western countries “to create the best dental standard in the world” (Sweden). Patients got up to 24 fillings - on average 12-16 depending on country. **What a horror!** They have up to 5 g in depots all over the body, on average about 200 millions Hg-atoms in every single cell. These patients are now getting old.

From the 60’ies onwards caries was successfully fought.

In the late 70’ies dentistry introduced “high copper amalgam” with 70% Hg for children for convenience with an excuse of fighting bacteria. However, it is 50 x less stable, the Nordic Institute of Dental Materials says (14). Even a few fillings double the load many times. They are now fertile and transfer Me-Hg to the brains of the fetus/infant explaining the epidemic of mental retardation of the growing generation. It was a rash madness, a turning point to the worse regarding the children. To give birth is an excellent way to get detoxified, and the first baby gets most. The fathers are apt to be severely hit in due time.

No wonder that chronic diseases in the brain and nervous tissue are exploding in the next generation and among the elderly.

E. Surprising results of amalgam replacement. Dr. Hal Huggins, the dentist mostly skilled in amalgam replacement, reports spontaneous cure of leukemia, epilepsy, fibromyalgia, hypertension, hypercholesterolemia (15a). Once Hg is bound to hemoglobin the transport of oxygen is blocked, more cells are formed, the blood gets more viscous --> hypertension.

Later he reports of improving or curing 85% of 1.000 MS-patients (15b). He himself is a victim. He found the spinal liquid of MS-patients polluted by several weird proteins. They disappeared 1-2 days after replacement! (16)

In the spectacular Coors Study 1996, 27 patients with Hg as sole toxin had their amalgams replaced with a plastic. Smaller fillings were replaced and again removed. Blood analyses were taken before and after removals. HH found (15a) that the body rids itself rapidly of Hg-contaminated red blood cells. Oxyhemoglobin had risen dramatically; 8 patients had more than doubled. Patients felt far more energetic than for years.

Exorbitant amounts of white blood cells in cases of leukemia dropped considerably. Hg interferes with the metabolism of porphyrins in the synthesis of hemoglobin. Patients had 416 micrograms in urine/day, norm is 12, dropped to 35, up to 149 after the second filling and finally down to 80. A sclerotic patient got her amount of 2100 down to 200.

Hg changes cholesterol levels. A striking trend was detected: Most high levels came down and low levels up, centered at 221 mg%.

After reimplantation patients became argumentative and unpleasant. The findings have not been published due to censorship. Ref. Internet and (15a).

Mutter J said in a review that “epidemiological and demographical studies, frequency of amalgam application in industrialized countries, clinical studies, experimental studies and the dental state of AD patients in comparison to controls suggest a decisive role for inorganic mercury in the etiology of AD” (17).

An aorta from a by-pass operation had > 3.000 times, and a biopsy of an idiopathic dilated cardiomyopathy > 20.000 times the normal figure (18). High Hg in a thyroid cancer.

Anecdotal or unknown? They can be repeated over and over again; many are scientifically explainable. How much is required to convince medicine of the truth?

F. The need of food supplements, i.e. vitamins and antioxidants, to Hg-poisoned patients.

As Hg is the main source of free radicals, it kills antioxidants. Together with vitamins they are effective, without adverse effects, non-patentable, cheap and they compete with drugs. Their current discrimination is backed by great financial powers, negative findings are flourishing. These are, however, worthless as authors do not know if the result is due to a surplus of radicals caused by Hg. In contrast positive results are valid: The Food Supplements are strong enough to defeat Hg. This simple argument pulls the carpet from under the Food Supplement Directive, FSD.

Scientists with a broader knowledge will know that vitamins and antioxidants are the universal gift of evolution to defend good health in all beings, plants, animals and humans. The plant kingdom generates most of them.

Two independent and serious papers appeared recently: Two scientists of Harvard University reviewed Medline 1966 - 2002 in JAMA (19-20): *Vitamins for Chronic Disease prevention in Adults*. Ex abstract: *Suboptimal intake of some vitamins, above levels causing classic vitamin deficiency is a risk factor for chronic diseases and common in the general population, especially the elderly. Suboptimal folic acid levels, along with vitamins B6 and B12 are a risk factor for cardiovascular disease, neural tube defects, colon and breast cancer; low levels of vitamin D contribute to osteopenia and fractures and low levels of the antioxidant vitamins A, E, and C may increase risk for several chronic diseases. Most people do not consume an optimal amount of all vitamins by diet alone. Pending strong evidence of effectiveness from randomized trials, it appears prudent for all adults to take vitamin supplements.*

In 2004 the UN University said: *The brainpower of entire nations has diminished due to a shortage of the right vitamins. A difference of 5-7 IQ points does not sound like a lot, but you are significantly reducing the number of gifted people and increasing those with mental incapacities. Vitamin deficiency is a disease and when people have this disease, they do not reach their ideal mental potential.*

The FSD and those restricting the optimal intake, i.e. much more than RDA's are crucially against the prevention and partial cure of mental diseases due to Hg-toxicity. The SC behind had not the faintest idea of its pathogenic oxidative stress. They also reduce the level of IQ.

G. Asking Google about experiments on animals. The following question "Experimental autoimmune diseases in animals induced by mercury" and similarly for chronic, Parkinson's and Alzheimer's diseases gave 88.000, 288.000, 68.000 and 93.000 responses. Certainly only a few % are relevant, but very many in the Establishment must know about them. As they are intended to avoid risks in humans and help them, it is surprising to notice the negligence.

It is an offence to consciously cause a disease by medical treatment, e.g. the use of amalgam. The question is: How close is the criminality?

The oldest Google-reference looked at was: Louis W Chang, US, a famous toxicologist who many years ago stated: "Heavy metals will be the main problem of health in the new century". He injected mercury compounds including inorganic mercuric bichloride (HgCl₂) into rats and within 12 hours the blood/brain barrier was impaired (21).

Another paper is "Mercury-Induced Autoimmunity in Mice" from Univ. Southern Denmark, Odense and Univ. of Linköping, Sweden, who take part in the secret.

H. Closing remarks. The above is well-known to physicians outside the Establishment and free radicals inducing chronic diseases form part of biochemical and food science. As some 20.000 papers on amalgam damages exist, it is not really a newly identified health risk.

In the introduction to the Green Paper attention was called to mental ill health of up to 27% of the citizens with anxiety and depression as the most common mental disorders, at present 4,5 % and expected to be the cause of disability No.2 i 2020. Anxiety and depression are the most frequent symptoms of Hg toxicity, indeed. The scary number of suicides, 58.000 citizens p.a., is more than the 50.700 road traffic deaths. Suicides are often related to antidepressive drugs.

Understanding the amalgam scandal and acting against it as soon as ever possible has a huge potential of reducing the suffering of patients and in the long run reduce the ever increasing costs of ill healths. The school in Zürich dropped teaching amalgam 15 years ago.

In a decennium the norm shall be, that people above 80 are healthy. We know what to do and have still time to save many of the elderly from ending as mental wrecks, to stop children becoming mentally handicapped. If not acting their disorders will last the whole century.

The Romans knew it: *Quem Mercurius perdere vult, dementat prius*". (The one destroyed by Hg is the first to deny it). Have poisoned decision-makers lost their discernment, too?

The Commission should be in front, convince WHO and force Codex on track.

I. List of symptoms and diseases, in total the most costly ones:

Mental symptoms are well-known to poisoned patients. An incomplete list is:

Depression, anxiety, shyness, suicidal thoughts, headache, fatigue, tremor, muscle and joint pain, vertigo, nervousness, numbness, irritability, tingling of lips and fingers, visual disorders, lack of concentration, loss of memory, insomnia, damaged immune defence --> frequent colds --> sinusitis, cold extremities, loss of appetite --> loss of weight, heavy menstrual pains. Patients are sent from one costly test to the next one; they are not hypochondriacs, but Hg-poisoned. "Experts" have no explanation.

It is remarkable that highly qualified biochemical science has documented antioxidants to help **chronically ill in general** (22-23). It supports that the escalation of the diseases listed below is partly the consequence of Hg-toxification as described in particular i par. B.

Additional the effect of cystein-Hg and organic Hg. Hg promotes the ageing process, too.

Senile dementia, Parkinson's & Alzheimer's dz. MS and ALS, schizophrenia, fibromyalgia, epilepsy, migraine, tinnitus, chronic fatigue, atherosclerosis, cancer, osteoporosis, some rheumatic dz., hypertension hypercholesterolemia, some allergies: asthma and psoriasis, reduced quality of sperm, cataract, AMD other age-related eye diseases, bacterial resistance to antibiotics.

The mental retardation of many children, reduced IQ, demand for social assistance and special education, ADHD-children, autism, diabetes-2 at school age, hyperactivity, violence and criminality.

K. References. Due to the controversial contents you may have interest in this list.

- (1) Guzzi G et al. Dental Amalgam and Mercury Levels in Autopsy Tissues, Food for Thought. Am J Forensic Med Pathol, 27, 2006, 42-45.
- (2) Intern Acad of Oral Med and Toxicol. www.iaomt.org a) Smoking Teeth; b) How Mercury Causes Brain Neuron Degeneration. Also "Safe Removal of Amalgam Fillings".
- (3) a) Hahn LJ et al. Dental "silver" fillings: a source of mercury exposure revealed by whole body image scan and tissue analyses, FASEB J 1989; 3: 2641-46.
- (3) b) Hahn et al. Whole-body imaging of the distribution of mercury released from dental fillings into monkey tissues, FASEB J 1989; 4: 3256-60
- (3) c) Vimy MJ et al. Maternal-fetal distribution of 203-Hg released from dental amalgam fillings, Am J Physiol 1990; 27: R939-945.
- (4) <http://tekran.com/special/fred/html>. A Canadian company producing Ultra-trace Hg Analysis Equipment, at a conference at Fredericton, Brunswick, Canada, Sept 21-23, 1998.
- (5) Stock A, Die chronische Quecksilber- und Amalgamvergiftung. Arch Gewerbepathol Gewerbehyg, 1936; 7: 388-413.

- (6) Störtebecker P: Direct Transport of Mercury from the oro-nasal Cavity to the Cranial Cavity as a Cause of Dental Amalgam Poisoning, *Swed J Biol Med*, 1989; 3: 8-24.
- (7) a) Nylander M, Mercury in pituitary glands of dentists, *Lancet*, 1986; i: 442.
- (7) b) Nylander M, Weiner J, Relation between mercury and selenium in pituitary glands of dental staff, *Br J Ind Med*, 1989; 46: 751-752.
- (7) c) Nylander M, Accumulation and Biotransformation of Mercury. Thesis, Karolinska Inst. 1990, Stockholm.
- (8) Ahlbom A, et al. Dentists, dental nurses and brain tumours. *BMJ*, 1986, 292: 662.
- (9) Maths Berlin, Mercury in dental-fillings materials - an updated risk analysis in environmental medicine terms A report to the Dental Materials Commission, Stockholm 2003. www.dentalmaterial.gov.se
- (10) Encyclopedia of Food Science and Nutrition. 2003. Role of Antioxidant Nutrients in Defense Systems, p. 282. Heavy Metal Toxicology, p.3050. Mercury Toxicology, p. 3858. Selenium/Physiology, p.5117.
- (11) Berlin M, Governmental meeting in Oslo on May 29, 2000, official report p. 89-90:
- (12) Vamnes JS et al., *Sci total environ*, 2003, vol 308, p. 63-71.
- (13) Haley BE, Pendergrass JC in a huge collection of literature on www.altcorp.com/DentalInformation/hgneurotoxicity.htm: Toxic Effects of Mercury on Central Nervous System Nucleotide Binding Proteins: Potential Role in Alzheimer's Disease, p. 30-32.
- (14) NIOM-report No. 51/1981 (in Norwegian) ex Weiner JA, Nylander M, Aspect on Health Risks of Mercury from Dental Amalgam in Toxicology of Metals. Ed. Chang LW, CRC Lewis, 1996, p. 473.
- (15) a) Huggins HA & Levy T E, Uninformed Consent, 1999. www.hugnet.com
- (15) b) Huggins HA, Solving the MS Mystery, 2002. www.hugnet.com
- (16) Huggins HA, Levy TE, Cerebrospinal Fluid Protein Changes in Multiple Sclerosis After Dental Amalgam Removal, *Altern Med Rev*. 1998; 3(4): 295-300.
- (17) Mutter J, Alzheimer Disease: Mercury as pathogenic factor and apolipoprotein E as a moderator. *Neuroendocrinology Letters* No.5 Oct., Vol. 25, 2004, www.nel.edu
- (18) Frustaci A et al. Marked Elevation of Myocardial Trace Elements in Idiopathic Dilated Cardiomyopathy Compared With Secondary Dysfunction. *J Am Coll Cardiol*. 1999; 33: 1578-1583.
- (19) Fairfield KM, Fletcher RH, Harvard, Vitamins for Chronic Disease Prevention in Adults, Scientific Review, *JAMA*, 2002; 287: 3116-26. Covering 1966-Jan 11,2002, 152 ref.
- (20) Fletcher RH, Fairfield KM, Ditto, Clinical Applications, *ibid*. 3127-29. 33 ref.
- (21) Chang LW et al. "Blood-brain barrier dysfunction in experimental mercury intoxication", *Acta Neuropathologica* 21,3:179-184, 1972.
- (22) Ames BN et al., Oxidants, antioxidants and the degenerative diseases of aging. *Proc Natl Acad Sci USA*. 1993; 90:7915-22.
- (23) Ames BN et al., The causes and prevention of cancer. *Proc Natl Acad Sci USA*. 1995; 92:5258-65.
- (24) Wolfe MR et al. Effects of mercury on wildlife, a comprehensive review. *Env Toxic Chem* 1998;17:146-60. A promising study.
- (25) Møller P. Mercury Amalgam: The Cause of Chronic Diseases, Mental Retardation in the Next Generation and Accelerated Aging. *Clin Pract Altern Med*, 2001; 2: 181-187. 44 ref.

2.1.2. Alternative materials.

Those on the basis of organic polymers are in a steady development, i.e. not standardized. Studies on durability will therefore be outdated, when they are ready. Some general remarks:

- 1) It is important, that monomers are kept at a very minimum, as they may cause allergy.
- 2) Polymers with large molecules only, will not at all be reactive as Hg-atoms or -ions. As we have no enzymes to split them, they are much less toxic.
- 3) Plast fillings may be very durable. 5 persons in my close family have fillings 10-20 years old without any problems at all.
- 4) Polycarbonates are considered OK by experienced dentists, e.g. "Diamond Crown".
- 5) Discrimination of plastfillings is a good argument to delay a ban on amalgam.
- 6) Crowns of porcelain have been excellent for many decennia.
- 7) Gold alloys should not be used, when other metals are present, due to formation of an electric element. This also applies if the other metal is the noble one, e.g. palladium and gold dissolves. Reference is made to page 3.
- 8) Implants of titanium are considered toxic for some patients. Implants of zirconiumdioxide is not a metal, but a semi-precious stone and as such safe, but more expensive.

Addendum

One of the chronic disorders having developed sharply in recent times is obesity. There are many obvious causes for the research done, however, the basic question is: Why is the centre of satiety out of order? Situated in the hypothalamus, one of the main targets for depots of mercury, a connection may exist. It seems relevant to do research to get confirmed or denied whether Hg plays a role in the disaster.

Research has shown that endocrine disruptors - Hg is one of the stronger ones - while acting in the foetus may change genes and introduce obesity later in life, Prof. Fredrick vom Saal at the AAAS Conference in San Fransisco in February 2007.