Concerns over Health impacts of Dental Amalgams and latest scientific findings

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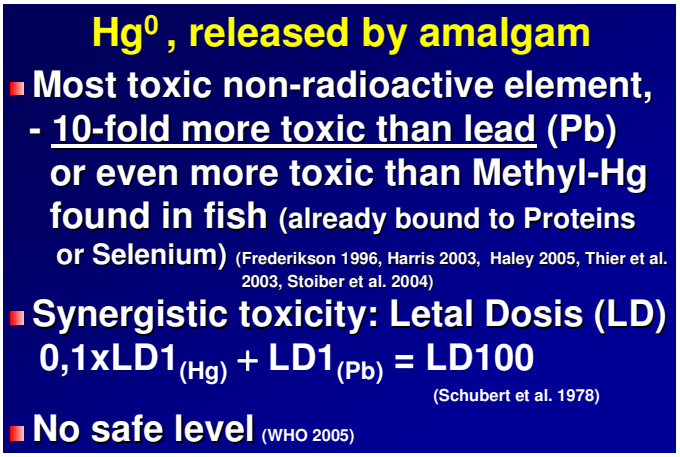
Summary

Dental Amalgam contains ca. 50% mercury. Mercury vapor which escape continuously from amalgam implanted for decades in human mouth, is the **most toxic non-radioactive element in the universe**. It is far more toxic than Cadmium (Cd), Arsenic (As) and even 10-fold more toxic than lead (Pb). It has been further show that there exist synergistic toxicities on human neurons with lead (Pb), Aluminum (Al), Iron (Fe) and other toxins. Methyl-mercury found in fish, is less toxic than mercury vapor because it is less reactive through tight bindings to Selenium or proteins in fish tissues. **Dental amalgam outside of human mouth must be handled as a toxic waste disposal hazard**. The only "safe places", where it can be stored is in an airtight vessel until safe disposal or centimeters from human brain in the mouth for years. The amount of mercury of one big amalgam filling (contain approx. 0.5-1g mercury) exceeds the U.S. EPA standard for human exposure for over 100 years.

According to leading toxicologists, including the WHO, dental amalgam contributes to 80% of human mercury body burden. Only 20% derived from fish, vaccination and all others mercury sources. Despite organized Dentistry has been claimed since decades that only "minute amounts" of mercury is released from dental amalgam, autopsy studies revealed that **people with dental amalgam have 2 -12 fold more mercury in their body tissues** (kidney, liver, brain, glands, bone etc.) and in the cell organelles (e.g. mitochondria, nucleus) than individuals, which never had dental amalgam. This mercury will reach the environment through burial and cremation. A recent study found 10- times more mercury in brain tissues from deceased individuals with more than 12 amalgam fillings compared with individuals with less than three amalgams. Also, infants and children of mothers with dental amalgam during pregnancy have significantly more mercury in their body tissues than infants/ children from mothers without amalgam. It was advised to pregnant women, to reduce their intake of fish, which contain high levels of mercury. **But if fish consumption, which contributes only to 20% of humans mercury body burden, is a problem, why isn't amalgam, which contributes to 80% mercury body burden, a bigger problem?**

Maternal amalgam also contributes significantly to mercury levels in cord blood. Elevated mercury levels in cord blood, which are far below safety levels, have been shown to increase the risk for neurodevelopmental disorders in children. For example, mothers of autistic children have significantly more amalgam fillings during pregnancy.

It has been shown, that there exists no safety level for mercury. Mercury levels in urine, blood or hair did not reflect mercury levels in body tissues. Especially individuals, with genetically determined reduced ability to detoxify mercury from their cells into the blood and thus to urine, stool or hair, have lesser mercury levels in their excrements but suffers more likely from mercury toxicity. Autistic children have significantly more mercury in their baby teeth, which reflect their mercury levels in brain cells, than healthy children. About 15 % of the population has an increased susceptibility to mercury. There is mounting scientific evidence that mercury exposure through dental amalgam may contribute also to e.g. Alzheimer's disease, autoimmunity (including Multiple Sclerosis), oxidative stress, genotoxicity, nephrotoxicity, miscarriage and infertility, negative neuropsychological effects including suicide, antibiotic resistant bacteria, chronic fatigue, chronic pain of muscles or joints, depression, headache, irritability, impairment of concentration, memory and sleep, allergies and possibly cancer.

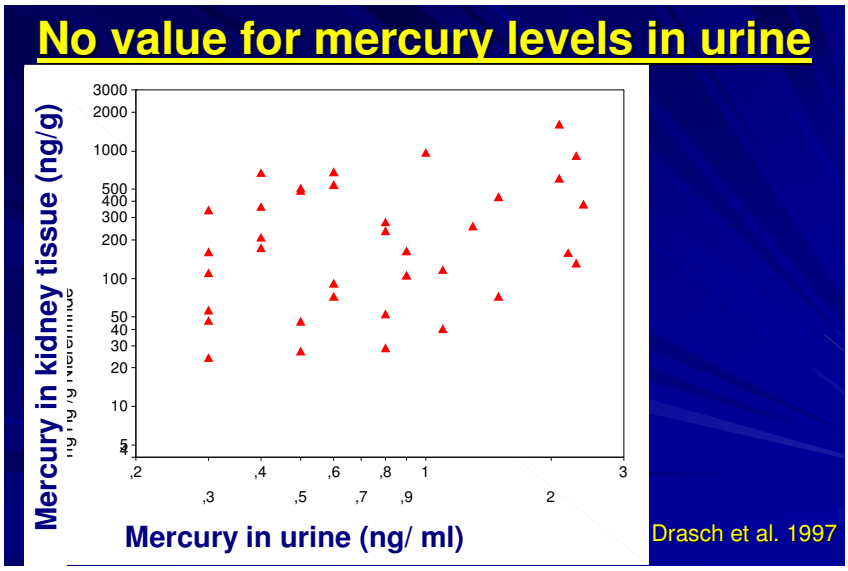


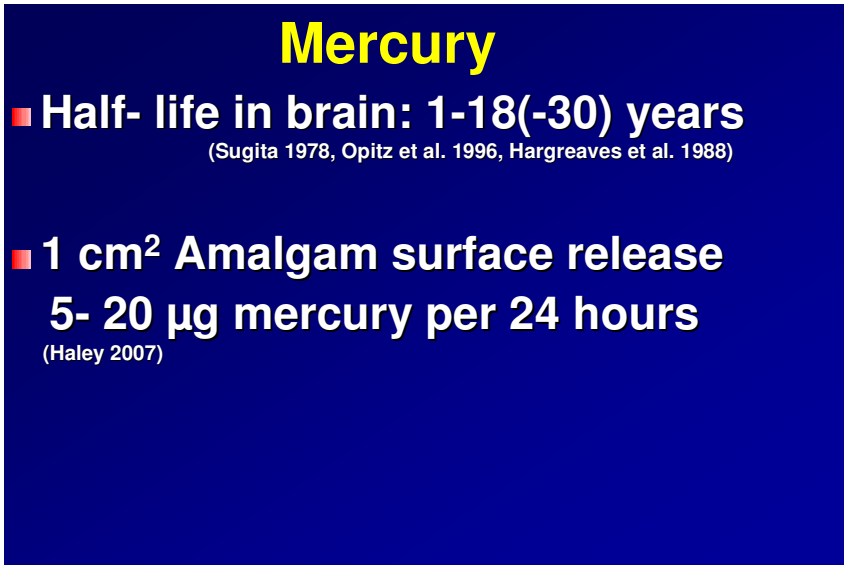
Ladies and Gentlemen, thank you for your invitation. Dental amalgam contains ca. 50% of metallic mercury which is the most toxic non-radioactive element, even 10 fold more toxic than lead on neurons. It is also more toxic than Cadmium or arsenic. Mercury vapor released by dental amalgam continuously is easily absorbed by human cells and bind very tightly to intracellular structures which in turn are damaged.

Methyl-mercury in fish has already reacted with proteins and other protective molecules or atoms in fish tissues, like Glutathione or Selenium. This is why the fish does not die of mercury toxicity. This tightly bound mercury, or methyl mercury, is not as toxic as an equal amount of the pure equivalent (methyl mercury, which is unbound and which is normally used for scientific experiments). Thus, while there may be an equal exposure to mercury from a tuna fish sandwich as from dental amalgam, the mercury from amalgam has much more toxic potential.

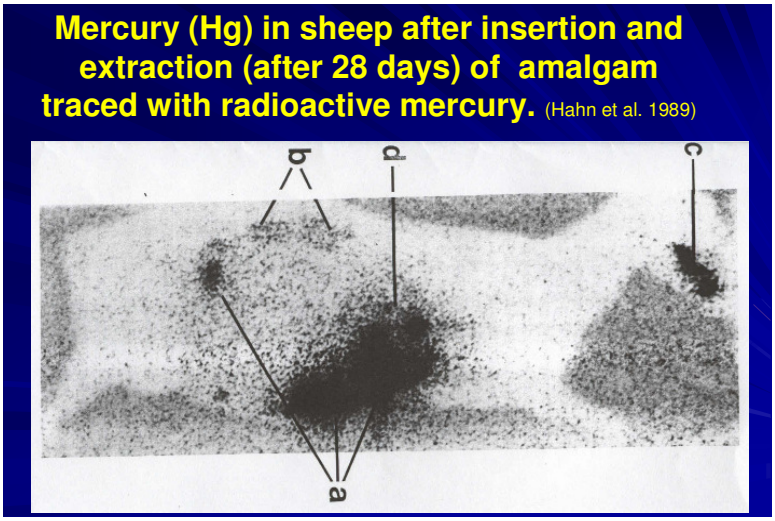
Mercury shows synergistic toxicity to other metals like aluminum, iron or lead. If you gave the Lethal Doses (LD1) of lead to animals, to which normally only 1% die (LD1 (Pb)) together with only a tens of the Lethal Doses of mercury, to which normally 1% of the animals will die: All (100 %) of the animals die.

Because levels in blood, urine, saliva or hair did not correlate with mercury levels in body tissues, no safe level for mercury vapor can be determined.



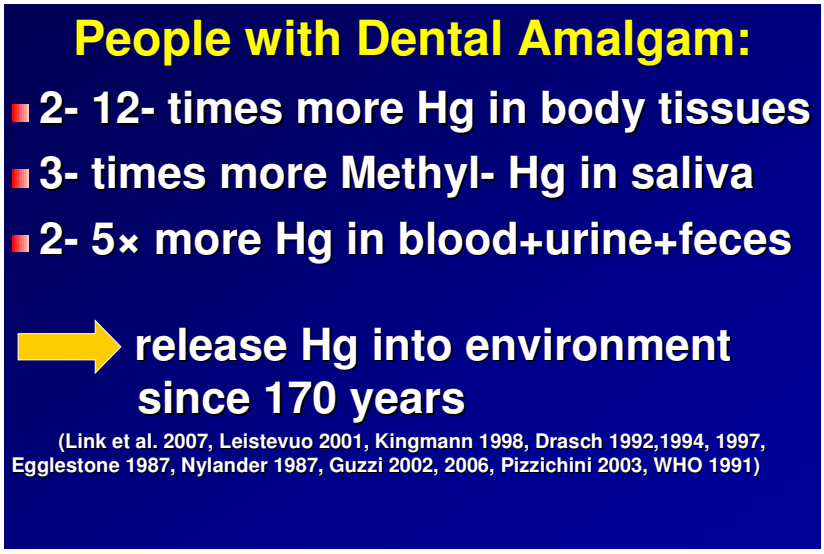


Half live in brain is up to 18 years. New studies revealed that 1 cm2 of Amalgam surface release up to 20 µg of mercury per 24 hours. Chewing, cleaning of teeth, smoking or grinding elevates this amount dramatically (by a factor 10-100).

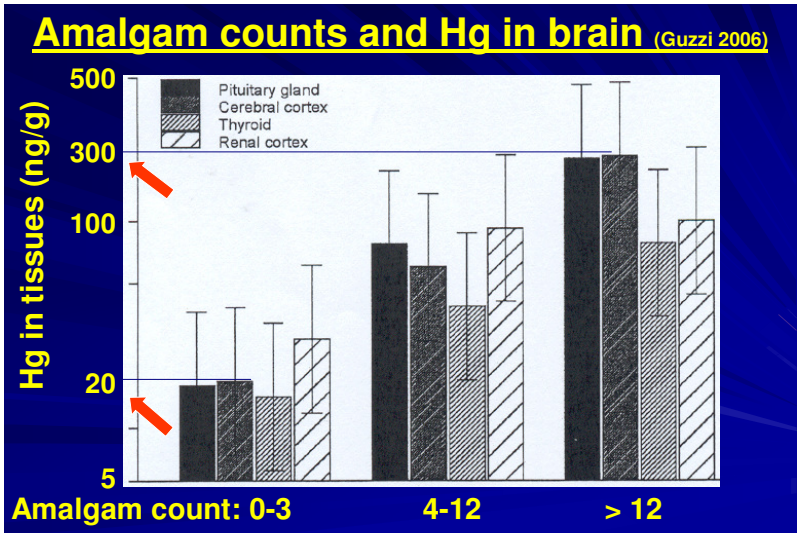


It has been shown that even after 28 days of amalgam insertion in teeth of sheep's and monkeys, several body tissues (like jaw bone, brain, liver, gut, kidney and stool) contain high levels of mercury compared to controls. Especially the oral mucosa and jaw bone contain high levels.

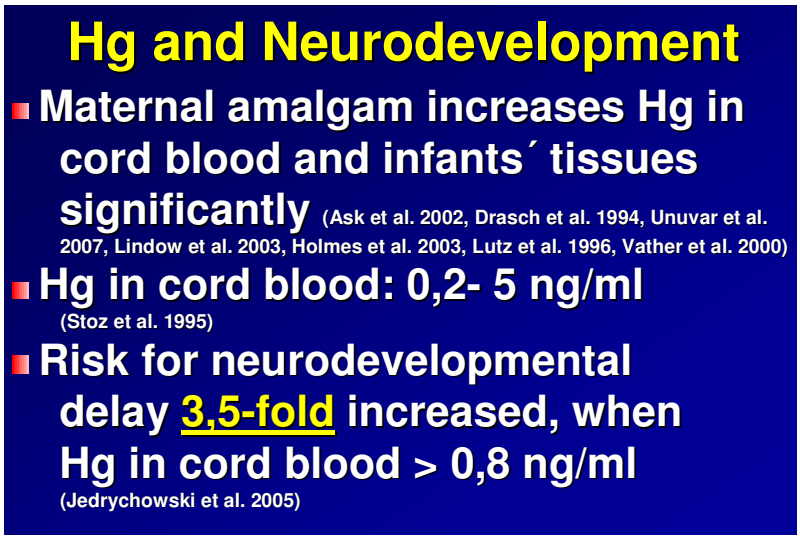
This is an amalgam tattoo on the jaw bone in a woman, whose dental amalgam was removed 10 years ago. This tattoo was neither seen by inspection of the oral cavity nor through x-ray imaging. Note that the woman suffered from an ipsilaterale rezidive of a breast cancer.



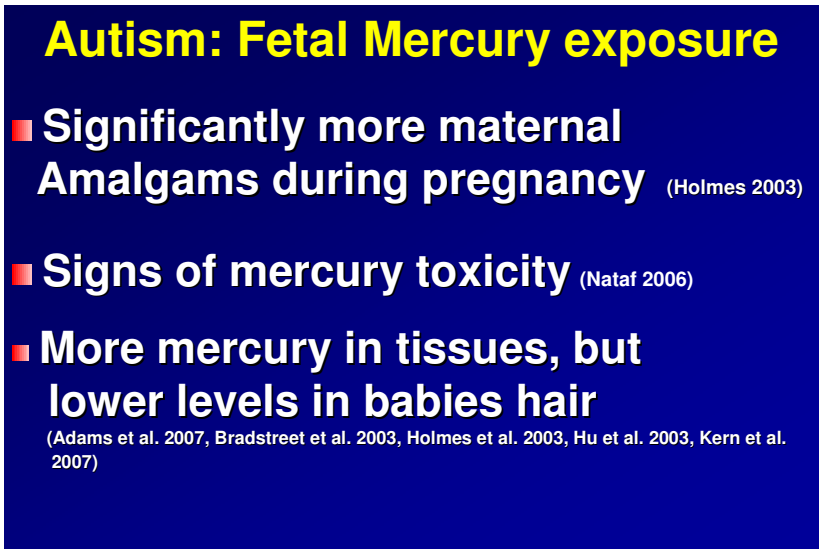
People with dental amalgam release 2-10 more mercury through saliva, stool, exhaustion and sweat in the environment. Many autopsy studies have revealed that people with actual or former amalgam fillings have 2-12 times more mercury in their body tissues. Therefore a significant amount of mercury will be also released after death through burial or cremation, despite removing amalgams before cremation. Microorganisms in the gastrointestinal tract are able to transform mercury released by amalgam fillings to organic mercury compounds (which are not bound to molecules or atoms as methyl- mercury found in fish).



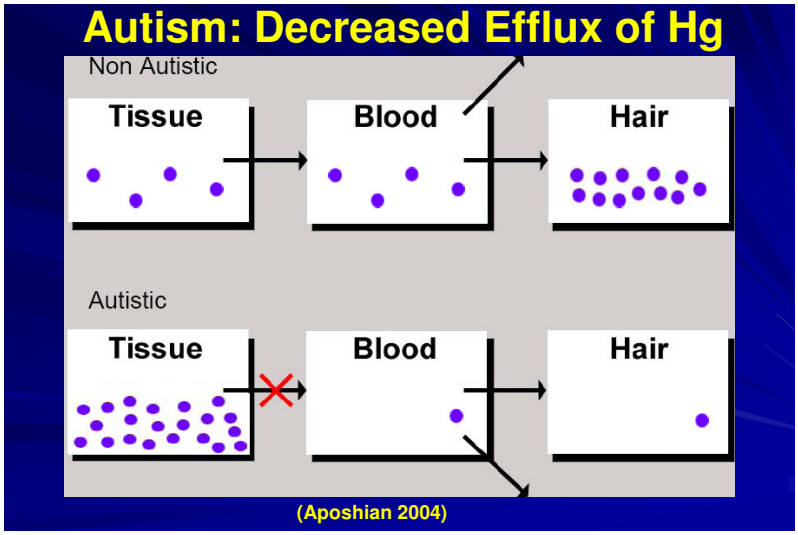
Deceased Italians have more than 10-times more mercury in brains, when they have more than 12 amalgam fillings compared to people with less than 3 amalgams. Taken together, amalgam contributes more to human mercury burden than all other sources.



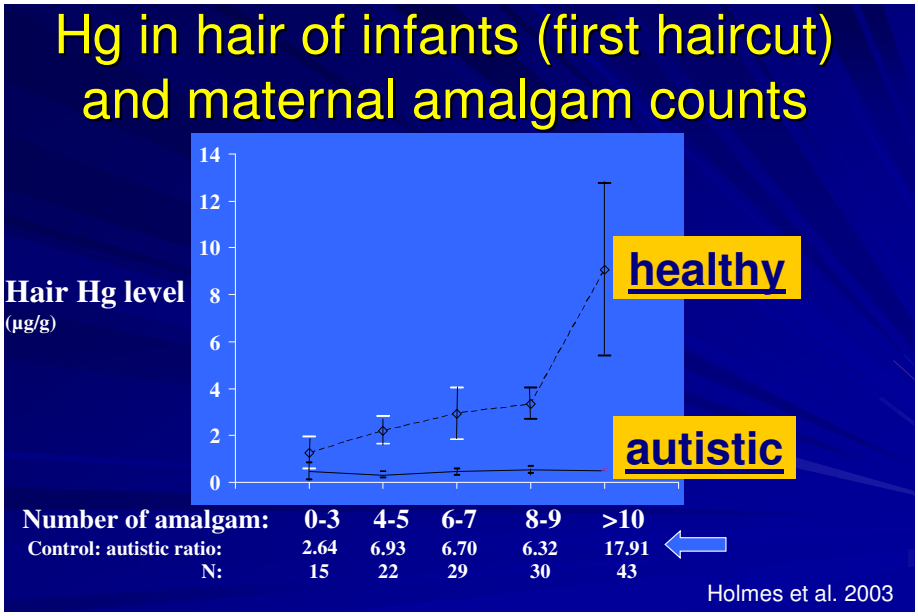
We now know form autopsy studies that amalgam fillings of the mothers elevates mercury levels in fetal, infant and children tissues and cord blood significantly. The "normal level" in cord blood is 0,2-5 ng/ mercury per ml cord blood. Therefore, a significant portion of the population reach more than 0,8 ng Hg/ml in cord blood. This mercury levels increased the risk for neurodevelopmetal delay 3,5- fold in children.



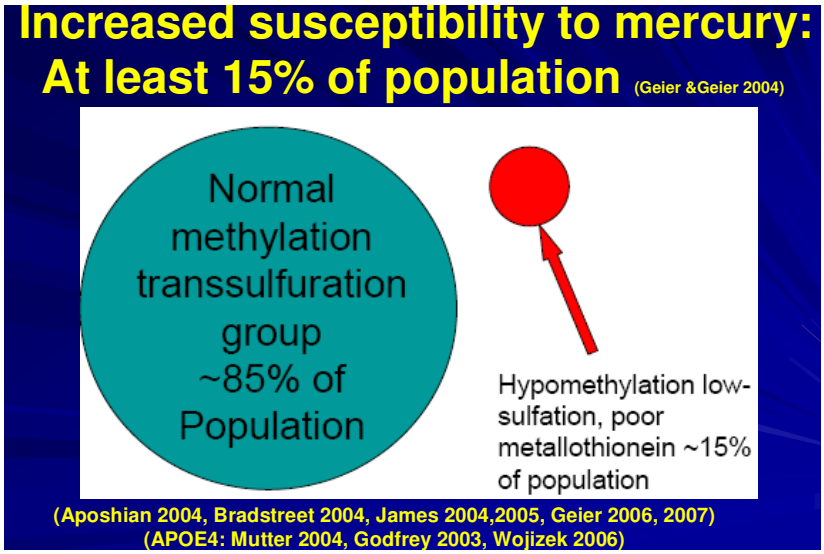
It has been also shown that mothers of autistic children have significantly more dental amalgam fillings during pregnancy. Other studies indicate that autistic children have significantly more mercury in body tissues than healthy children. In contrast to that, they have very low mercury levels in their baby's first hair cuts.



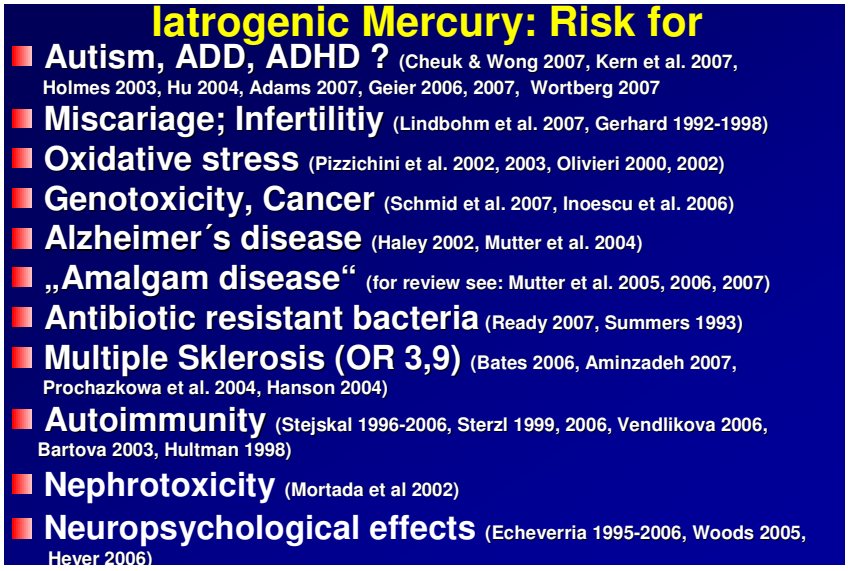
Children with autism represent a subset of the population which is more susceptible to mercury exposure. Because they have genetically determined impaired detoxification pathways, they can't excrete mercury from their cells (which is bound to glutathione) into the blood and thus in their urine, stool or hair.



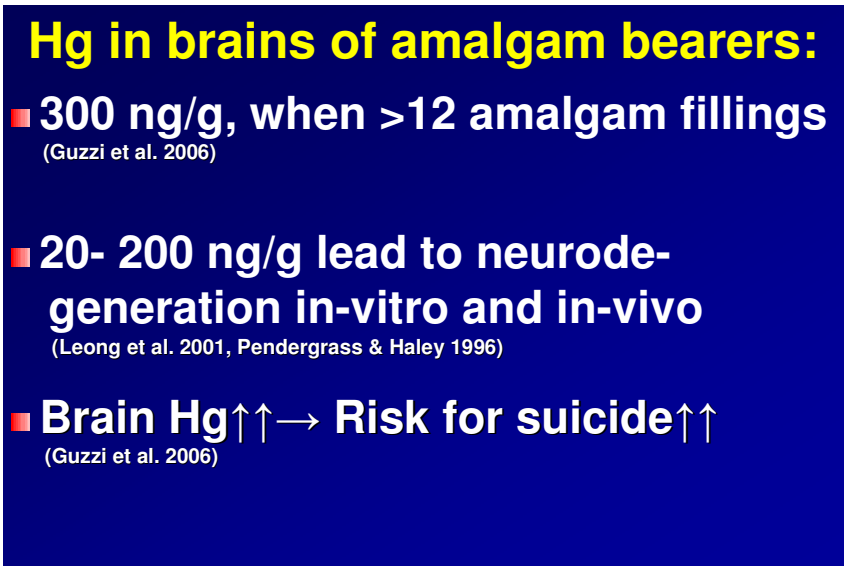
The more amalgams the mothers have in pregnancy, the more mercury is in hair from healthy children. This is not true for autistic children. It is not the mercury in the hair which define toxicity but mercury leaved in the brain cells.



We now know that 15 % of the population has increased susceptibility to mercury. Given the spread usage of dental amalgam, this represents a significant amount of people which may suffer from mercury toxicity through dental amalgam.

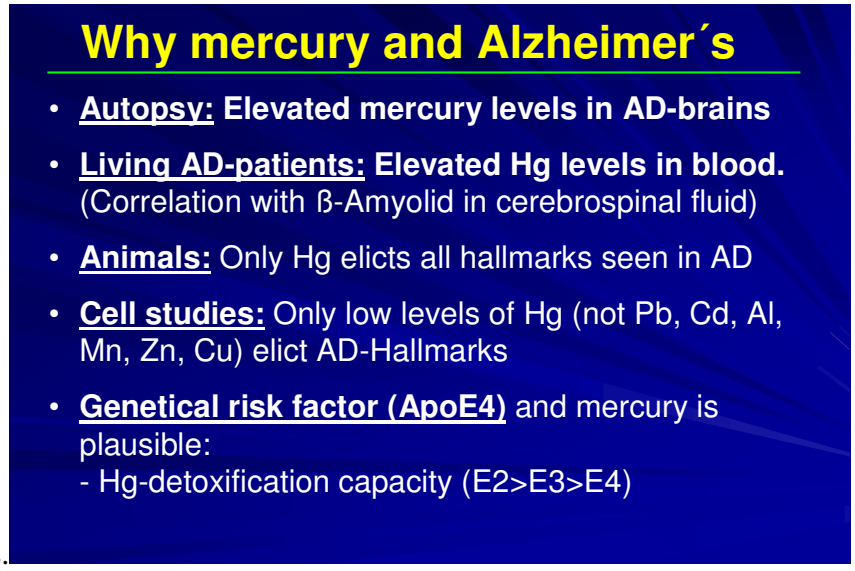


Some adverse health effects from additional mercury exposure are described in the recent scientific literature (see slide). “Amalgam disease” includes several complaints like chronic fatigue, chronic pain, headache, impairment of memory and concentration, unsteadiness, sleeplessness, depression and more (Lind et al. 2002, Hanson 2004). 22,000 fold elevated mercury levels was found in heart tissues from patients with dilated cardiomyopathy (Frustraci et al. 1999)



People with more amalgam fillings have in mean 300 ng Hg/ g in their brain tissues, which also increased their risk of suicide. In experiments done with brain cells and living animals, even only 20 ng Hg/g lead to neurodegeneration. This mercury level is reached by a significant portion of the individuals with dental amalgam. World wide use of amalgam is rising through a caries epidemic in undeveloped countries (caused by increased consumption of processed foods like isolated sugar etc.)

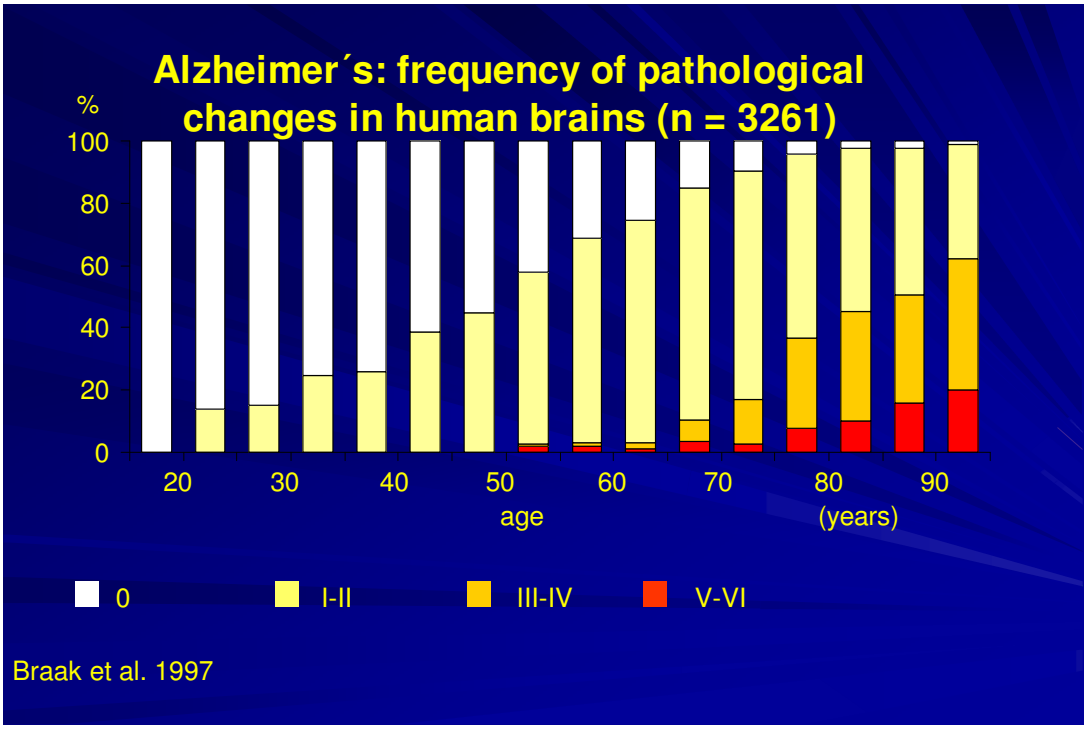
Mercury is toxic to human cells below safety levels. Every atom of mercury in the body lead either to consumption of protective molecules or atoms like Glutathione, Metallothione or Selenium or to damage of biological important cell structures like tubuline, membrane-proteins or even chromosomes.



Some studies found elevated levels of mercury in brains tissues of Alzheimer- patients, particularly in the nucleus basalis meynert, which is first damaged in the progress of the disease.

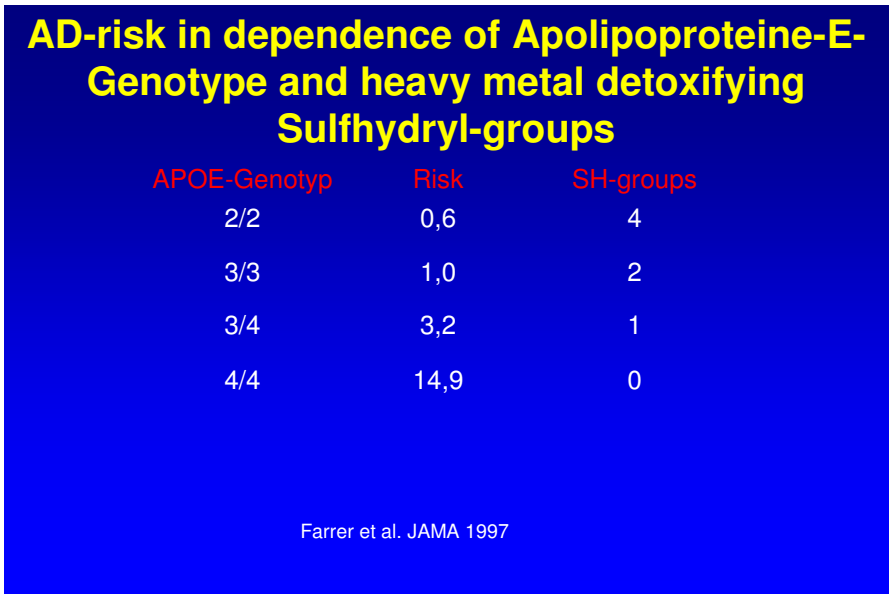
Inorganic mercury, not other heavy metals, leads to all Alzheimer-typical damage in experiments with cells and animals.

This Alzheimer-typical damage (Stage I-II according to Braak 1997) is seen in 20% of healthy individuals between age 20 to 30 years and rise to 50% at age 50 years. Most of this people show no clinical signs of Alzheimer-disease. But with increasing extend of damaged neuronal cells (stage III-VI) Alzheimer's disease will be recognized clinically. This is true for 50% of people aged over 85 years. But still in the age group of over 80 years, a small portion (about 2-5 %) shows no signs of Alzheimer typical neuronal damage in their brain tissues (stage 0). Their brains are comparable with brains of people under age 20 years.



Given the fact, that 95% of Alzheimer disease is caused not by genetic but by environmental factors together with the results from scientific research together with the fact, that over 95% of individuals in the age group over 80 years in developed countries had have dental amalgam in their life, **dental amalgam may be one if not the crucial factor for Alzheimer's disease**. It is very possible that

people over age 85, which show no pathological Alzheimer-typical changes in their brain tissues, represents the minority in the population, which never had dental mercury fillings and which mothers have no amalgams during pregnancy. These observation are underlined through the fact, that individuals with Apolipoprotein E4, which is not able to detoxify mercury out of the brain, have a significantly increased risk (up to 16 fold) to develop Alzheimers. Further, despite Africans living in their rural area have an Apo E4 Allelfrequency of 40%, they show only a low AD-risk. In contrast, Afroamercans have an higher risk for developing AD as white Americans (with only a Apo E4 allele frequency of 15%). This indicates that environmental factors causes the disease.



Finally, the synergistic effects of other heavy metals on mercury toxicity make it impossible to define a safe level of mercury. It is imperative that we try to eliminate al exposures to mercury and removal from dentistry is most important and critical to human health.

Government agencies routinely ignore the possible involvement of mercury in the exacerbation of any disease. Many experts in the field have explained this shunning of mercury based toxicity studies by the influence of organized dentistry which routinely uses mercury in the treatment of patients since 170 years. Beside the fact that some dental organizations possess patents for amalgam mixtures and profits from increasing world-wide use of amalgam, they also fear litigations analogue to the tobacco industry. Despite the scientific fact that dental amalgam contributes to 80% of human mercury load, organized dentistry claim that only “minute amounts” of mercury is released by amalgam fillings compared to other human mercury sources. Further they claim that one have to need more than 500 amalgam fillings to reach safety levels and after over 170 years of amalgam use, only some cases with side effects (allergies) of amalgam was described.