

SCHER preliminary opinion on "The environmental risks and indirect health effects of mercury from dental amalgam (update)"

YOUR IDENTITY	
1. Do you write as an individual or on behalf of an organization? -single choice reply-(compulsory)	Individual
2. Your name or the name of your organization: -open reply-(optional)	Florian Schulze (CAT-Berlin)
3. Your email address: -open reply-(compulsory)	florianschulze@hotmail.com
<p>Question 1: Are mercury releases caused by the use of dental amalgam a risk to the environment? The fate of mercury released from dental clinics as well as the fate of mercury released to air, water and soil from fillings placed in patients should be taken into account</p>	
4. YOUR COMMENTS: Do you agree with the observations made by the Scientific Committees? -single choice reply-(compulsory)	Mostly disagree
Explain why: -single choice reply-(compulsory)	Relevant scientific and other information missing from the analysis
5. Please provide the evidence to improve the overall report (with complete references): -open reply-(compulsory)	
<p>The report is taking the emission of methylmercury from dental practice(Point 3.2.2.4.) into account, which is not further specified. Oral methylation can take place by sulfate-reducing bacteria like Desulfomicrobium or Desulfobacter in subgingival dental plaque.[1] These genera are also the predominant sulfate-reducing bacteria in the human large intestine.[2] In correlation with elevated concentration of total mercury in stimulated saliva[3], which was studied in individuals with multiple dental amalgam fillings, humans, especially in populated areas, could be a significant source of mercury pollution. Even more, if there would be an increase of sulfate-reducing bacteria by prevalence or mutation, which could have effects on the methylation rate. Since the only reference in the report dates from 2003, I would claim for further analysis of this aspect and to take this comment into consideration. [1]Langendijk PS, Kulik EM, Sandmeier H, Meyer J, van der Hoeven JS. Isolation of Desulfomicrobium orale sp. nov. and Desulfovibrio strain NY682, oral sulfate-reducing bacteria involved in human periodontal disease. Int J Syst Evol Microbiol. 2001 May;51(Pt 3):1035-44. [2]J. S. van der Hoeven, C. W. A. van den Kieboom, M. J. M. Schaeken Sulfate-reducing bacteria in the periodontal pocket 19 DEC 2007 DOI: 10.1111/j.1399 302X.1995 .tb00156.x [3]Leistevuo J, Leistevuo T, Helenius H, Pyy L, Huovinen P, Tenovuo J. Mercury in saliva and the risk of exceeding limits for sewage in relation to exposure to amalgam fillings. Arch Environ Health. 2002 Jul-Aug;57(4):366-70.</p>	
<p>Question 2: Is it scientifically justified to conclude that mercury in dental amalgam could cause serious effects on human health due to mercury releases into the environment?</p>	
6. YOUR COMMENTS: Do you agree with the observations made by the Scientific Committees? -single choice reply-(compulsory)	Mostly disagree
Explain why: -single choice reply-(compulsory)	Disagreement with the interpretation of the existing scientific and other data
7. Please provide the evidence to improve the overall report (with complete references) -open reply-(compulsory)	

The use of mercury must be considered not only against the background of its elevated toxicity in the methylated form but also in interaction with other toxic elements like lead or cadmium. The inter-individual ability to eliminate methylmercury from the body, and the genetic predisposition to effects of mercury have another effect on the risk of mercury-induced disease, too. (WHO2010) Recent studies about low-level intoxications with mercury show long-term developmental delays (loss of IQ) in unborn and young children. Other toxic effects include alteration of sensory functions, motor coordination, memory and attention. Mercury has been linked to diseases like myocardial infarction, heart rate variability, blood pressure, attention-deficit/hyperactivity disorder, amyotrophic lateral sclerosis, autism and Parkinson's disease. [1-9] These serious health effects should be taken into consideration regarding the ongoing increase of Hg and MeHg levels in the environment and fish. Mercury is a chemical of global concern owing to its long-range atmospheric transport, its persistence in the environment once anthropogenically introduced, its ability to bioaccumulate in ecosystems and its significant negative effects on human health. (Minamata Convention) It is never removed from the environment; it is just moved to other locations and eventually buried under soils and sediments. Due to anthropogenic impact the mercury level in surface water has tripled during the past century and the MeHg concentration in historical archives, such as marine bird feathers, increased of a factor of 4 for the North Atlantic during that time, supporting the assertion of a first order relationship between the pools of available inorganic Hg and MeHg formed in the upper ocean. [10,11] It has been predicted that the concentration of Hg in North Pacific intermediate waters will double by the year 2050, relative to 1995, assuming actual atmospheric Hg deposition rates [12] and according to a recent study, warmer sea surface temperatures could result in greater bioaccumulation of MeHg in fish, and consequently, increased human exposure. [13] The Report quotes a recent study about mercury concentration in hair from mother and children which are generally below the EFSA derived TWI but not below the limit derived by US EPA. Another study (Table 4) exclusively analyses the estimated transformation of the mercury-emission of dentists into the environment to MeHg in fish and shows that in a worst case scenario the limits by the US EPA and EU could be exceeded. This demonstrates that the contemporary exposure of MeHg is already elevated and that there is a close relation between the emission of Hg and the exposure to MeHg by the consumption of fish even if the dental emission is only a relatively small contribution to the total anthropogenic emission. From my point of view these alarming circumstances and their in fact existing health effects should not only lead to a more conservative threshold (WFD) but to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds by an unconditionally phase out of dental amalgam. PS: References are attached in a mail to SANCO-SCHER-PUBLIC-CONSULTATIONS@ec.europa.eu.

Question 3: Comparison of environmental risk from the use of mercury in dental amalgam and the use of alternatives without mercury

8. YOUR COMMENTS: Do you agree with the observations made by the Scientific Committees? -single choice reply-(compulsory)	Uncertain
---	-----------

9. Please provide the evidence with the overall report (with complete references) -open reply-(compulsory)

no comment