

## Scientific Committee on Health and Environmental Risks (SCHER)

### Request for an opinion on the environmental risks and indirect health effects of mercury in dental amalgam

#### Background

The Community Strategy Concerning Mercury<sup>1</sup> was adopted in January 2005 with the key aim to reduce mercury levels in the environment and to reduce human exposure. Mercury and its compounds are highly toxic to humans, ecosystems and wildlife. A main concern is human exposure from methylmercury in fish.

Mercury is released to air, water and soil due to the use of dental amalgam. Once released into the environment mercury could change into methylmercury in the aquatic environment, the most toxic form, and in this way be a health problem when people are eating fish. Another problem is the presence of mercury in sewage sludge which is incinerated or used for land application as agricultural fertilizer to close the cycle of nutrients.

Mercury demand in the EU was around 440 tonnes in 2005. The demand is expected to decrease but some significant uses remain. As the chlor-alkali industry phases out mercury cells, dental amalgam will become the EU's major mercury use with a demand of around 90 tonnes per year.<sup>2</sup> It is therefore appropriate to re-examine the scope for substitution.

Amalgam has been used as a tooth-filling material since the 1800s. Today alternatives to dental amalgam are available on the market and in many EU-25 countries dental use of mercury is declining due to awareness of the toxicity of mercury and for aesthetic reasons. In some countries (e.g. Sweden<sup>3</sup>, Denmark<sup>4</sup>, Finland<sup>3</sup>, Norway<sup>3</sup> and Japan<sup>5</sup>) the use of dental amalgam is very limited and only used for some specific cases. Despite the development towards alternative fillings the use of dental amalgam has increased slightly in EU-25.<sup>6</sup> This is a result of better access to dental care in some countries where dental amalgam is still the main material used. At present amalgam fillings are considered less expensive than the alternative. However, this is debated since the cost of treatment does not cover the cost of releasing mercury in the environment. An investigation from Sweden shows that the material cost only stands for about 5-10 % of the total cost for the dental treatment<sup>3</sup>. Also many dental practitioners seem to be hesitant to change long-standing methods of treatment, are less aware of environmental risks, or they may be less familiar with the newer mercury free alternatives.

Two actions in the Strategy are related to dental amalgam.

Action 4: *"The Commission will review in 2005 Member States' implementation of Community requirements on the treatment of dental amalgam waste, and will take appropriate steps thereafter to ensure correct application."*

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<sup>1</sup> COM(2005)20 final, 28 January 2005

<sup>2</sup> Mercury Flows and Safe Storage of Surplus Mercury, report prepared for DG Environment by Concorde East West, August 2006, [http://www.ec.europa.eu/environment/chemicals/mercury/pdf/hg\\_flows\\_safe\\_storage.pdf](http://www.ec.europa.eu/environment/chemicals/mercury/pdf/hg_flows_safe_storage.pdf)

<sup>3</sup> Mercury – investigation of a general ban, Swedish Chemicals Inspectorate, Report 4/04 2004.

<sup>4</sup> 'Assessment of Technological Developments and Improved Product Control and Product Management Measures', Sufficiency and Effectiveness Review of the 1998 Protocol on Heavy Metals, UNECE Convention on Long-range Transboundary Air Pollution (LRTAP), Report prepared by the Task Force on Heavy Metals, June 2006.

[http://www.unece.org/env/tfhm/third%20meeting/PostOttawa/HMProtocol\\_Review\\_Products\\_final%20report\\_0615.pdf](http://www.unece.org/env/tfhm/third%20meeting/PostOttawa/HMProtocol_Review_Products_final%20report_0615.pdf)

<sup>5</sup> Statistics from the Ministry of Health, Labour and Welfare in Japan: Mercury use in dental clinics was about 5.2 tonnes in 1970, 700 kg in 1999 and 314 kg in 2004.

<sup>6</sup> Mercury Flows and Safe Storage of Surplus Mercury, report prepared for DG Environment by Concorde East West, August 2006, [http://www.ec.europa.eu/environment/chemicals/mercury/pdf/hg\\_flows\\_safe\\_storage.pdf](http://www.ec.europa.eu/environment/chemicals/mercury/pdf/hg_flows_safe_storage.pdf)

Action 6: *"In the short term the Commission will ask the Medical Devices Expert Group to consider the use of mercury in dental amalgam, and will seek an opinion from the Scientific Committee on Health and Environmental Risks, with a view to considering whether additional regulatory measures are appropriate."*

The European Parliament has asked the Commission to come forward by end of 2007 with a proposal to restrict the use of mercury in dental amalgam.<sup>7</sup>

It necessary that The Scientific Committee on Health and Environmental Risks is therefore requested to investigate the environmental risks and indirect health effects connected to the use of dental amalgam.

### **Terms of reference**

The SCHER is asked for an opinion – based on an evaluation of reports prepared by Germany, Denmark and Sweden (available as supporting documents) - on environmental risks and indirect health effects from use of dental amalgam. The evaluation should not exclusively be restricted to the reports from these Member States but should also take into account the much wider information on risks related to mercury available from other Member States of the EU 25.

The opinion should take into consideration – as far as the required information is available in the supporting documents - all possible mercury emissions resulting from the use of dental amalgam during the products whole life cycle (e.g. dental clinics, sewage disposal systems, crematoria).

If the necessary information is available, the committee is also asked to compare the use of mercury in dental amalgam with other available alternatives.

In their evaluation of the supporting documents, the SCHER should in particular address – to the extent possible- the following:

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.
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?
3. Comparison of environmental risks from use of mercury in dental amalgam and use of alternatives without mercury.
4. If the Committee under its work finds out that more information is needed, for one or more of the questions, the Committee is asked to provide a detailed list on what kind of information is needed to carry out the task.

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<sup>7</sup> European Parliament resolution on the Community strategy concerning mercury (2005/2050(INI)) from March 2006.