

Scientific Committee on Health and Environmental Risks (SCHER)
Request for an opinion on
Mercury in certain Energy-saving Light Bulbs

1. BACKGROUND

Certain energy-saving light bulbs, namely compact fluorescent lamps (CFLs), are widely available on the market and are offered for saving electricity and, eventually, reducing carbon dioxide emissions particularly from coal-fired power plants. They fulfill the requirements of Commission Regulation (EC) No 244/2009 on ecodesign requirements for non-directional household lamps¹ (Ecodesign Regulation), in contrast to traditional incandescent light bulbs which will be phased out progressively in accordance with the Regulation.

According to Directive 2002/95/EC on the restriction of hazardous substances in electrical and electronic equipment (RoHS Directive)² a mercury content in CFLs not exceeding 5 mg per lamp is allowed³. An indicative benchmark⁴ (best available technology) of 1.23 mg of mercury in energy efficient CFLs is provided in the above-mentioned Ecodesign Regulation.

The above-mentioned 5 mg mercury tolerance for CFLs is being reviewed on a regular basis, in line with the four-year-review period prescribed by the RoHS Directive. Such reviews, to be carried out with the aim of ultimately considering deletion, requires to assess whether the elimination or substitution of the mercury, whether by design changes or by other materials or components, is technically or scientifically possible, provided that the negative impacts for the environment, health and/or consumer safety generated by the substitution do not outweigh the possible benefits thereof⁵.

At the end of 2007, DG Environment commissioned a technical and scientific assessment of this exemption including, among others, consultation of interested stakeholders (e.g. producers of electrical and electronic equipment, environmental organisations and consumer associations). According to this assessment⁶, finalised in March 2009, the elimination of mercury in CFLs is still technically and scientifically impracticable. Further information can be found in annex 1.

On the basis of this assessment, the Commission will take a decision for the review of this mercury exemption before July 2010, after the consultation of the RoHS Technical Adaptation Committee⁷.

¹ OJ L 76, 24.3.2009, p. 3.

² OJ L 17, 13.2.2003, p. 19.

³ The mercury exemption for CFLs is listed as n° 1 in the Annex to the RoHS Directive.

⁴ Annex IV, n° 3 of the Ecodesign Regulation.

⁵ Article 5 (1.c) of the RoHS Directive.

⁶ Öko-Institut and Fraunhofer IZM (2009) Adaptation to scientific and technical progress under Directive 2002/95/EC. http://ec.europa.eu/environment/waste/weee/pdf/final_reportl_rohs1_en.pdf

⁷ RoHS Directive, Article 7.

In support of any future review, it may further be appropriate to consider the potential risks that may be associated with the release of mercury from a CFL when it accidentally breaks in the hands of a consumer, for example while winding in a CFL. In such case, long-term toxicological limit values may be exceeded up to 6,000 times, and consumer's exposure to mercury may only be 10-fold below acute intoxication. Further information can be found in annex 2. - Further considerations on the risk from mercury have been published elsewhere⁸, including for the event of a CFL breakage in a consumer home⁹.

Clean-up of the debris of a broken CFL has been described as complicated, requiring for example to take up the mercury droplets with adhesive tape and dispose of them as special waste (see annex 1). This again points to the relevance of the risk that the breakage of a CFL in a consumer's home could cause.

As regards the impacts of mercury emissions related to CFLs, the life-cycle of CFLs should be considered so as to weigh the risks of a mercury escape from CFLs, be it by accidental breakage or disposal as waste¹⁰ (instead of an appropriate recycling) against the reduction of mercury emissions from coal-based power plants due to the lower electricity consumption of CFLs. Available information (see annex 3) indicates that the reduced electricity consumption of CFLs reduces the need for electricity, thus the electricity production would release less mercury, and such decrease could, on balance, save about 10% of the mercury emissions into the environment.

Concerning disposal, Directive 2002/96/EC on waste from electrical and electronic equipment¹¹ (WEEE Directive) requires Member States to adopt appropriate measures in order to minimise the disposal of WEEE, including CFLs, as unsorted municipal waste and to remove mercury from the collected CFLs¹². A proposal to recast the Directive, made by the Commission in December 2008, strengthens the requirements for separate collection, and specifies that transport of WEEE is to be carried out in a way which optimises the confinement of hazardous substances.¹³

⁸ E. Groth (2008) Shedding might on mercury risks from CFL breakage. Report for The Mercury Policy project. http://mpp.cclearn.org/wp-content/uploads/2008/08/final_shedding_light_all.pdf

⁹ [http://www.osram.com/osram_com/About_Us/Society_and_the_Environment_-_Global_Care/Products_and_the_environment/Sustainability_Criteria/Key_Performance_Indicators_\(KPI\)/Mercury/Cleaning_Up/Broken_Lamp_Test/index.html](http://www.osram.com/osram_com/About_Us/Society_and_the_Environment_-_Global_Care/Products_and_the_environment/Sustainability_Criteria/Key_Performance_Indicators_(KPI)/Mercury/Cleaning_Up/Broken_Lamp_Test/index.html)

¹⁰ M Aucott, M McLindenb, M Winka (2004) Release of Mercury From Broken Fluorescent Bulbs. Research project summary. State of New Jersey, Division of Science, Research and Technology. <http://www.state.nj.us/dep/dsr/research/mercury-bulbs.pdf>

¹¹ OJ L 17, 13.2.2003, p.24.

¹² See article 5 and Annex II (2) of the WEEE Directive.

¹³ See articles 5 and 6 of the WEEE proposal:
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0810:FIN:EN:PDF>

2. TERMS OF REFERENCE

Against the above background, taking into account all available scientific assessments on mercury, including the Risk Assessment under 793/93/EEC and the previous opinions of SCHER, CSTEE, SCENIHR and the EFSA Scientific Panel on Contaminants in the Food Chain, the SCHER is requested to:

- A) Assess the possible health risks to consumers, from the mercury released from accidental breakage of CFLs. In doing so, the SCHER is asked to consider risks to certain vulnerable groups of population such as children or pregnant women;
- B) Taking into account the technical and scientific assessment from Öko-Institut and Fraunhofer IZM (2009), assess the potential risks to human health and environment of the alternatives available to reduce, eliminate or substitute the mercury in CFLs;
- C) Assess the risk to the environment from the mercury liberated upon disposal of CFLs, taking into account the above-mentioned limit of 5 mg mercury per CFL, the requirements for separate collection of the CFLs and for removal of the mercury from the collected CFLs. Would the risk be significantly reduced by strengthening these requirements?
- D) Weigh the risks identified in A), B) and C) against the reduction of mercury emissions from coal-based power plants due to the lower electricity consumption of CFLs compared to conventional household lamps. Incorporate and consider the potential health risks from mercury when CFLs are broken, accidentally in the household or after disposal, into the life cycle analysis of CFLs, taking into account the reduction of human health and environment risks resulting from the potential reduction in mercury emissions from coal-based power plants and the reduction of the emission of other pollutants due to the lower electricity consumption of CFLs compared to conventional household lamps.

3. DEADLINE

SCHER's opinion would be appreciated by the end of March 2010.