Öko-Institut e.V.
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Institute for Applied Ecology

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Adaption to scientific and technical progress under Directive 2002/95/EC

Results previous evaluation
Exemption No. 19

"Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact Energy Saving Lamps (ESL)"

(Excerpt from Öko-Institut Report 2006; Annex 1 Monthly Report 2)

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However the exemption should be restricted to those applications for which lead as activator in the fluorescent powder is currently used. Against this background we suggest the following wording:

"Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi2O5:Pb) as well as when used as speciality lamps for diazo-printing reprography, lithography, insect traps, photochemical and curing processes) containing phosphors such as SMS (Sr,Ba)2MgSi2O7:Pb)."

5.7 Discharge lamps containing lead in the form of an amalgam

Requested exemption

The European Lamp Companies Federation (ELCF) requests an exemption for very compact Energy Saving Lamps (ESL) with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and PbSn-Hg as auxiliary amalgam. These substances control the Hg - vapour pressure inside small compact fluorescent lamps (especially the types with a closed cover) stabilizing the light output and lamp efficacy over a wide ambient temperature range, which makes it possible to replace incandescent lamps by energy saving lamps in a wide range of applications, both indoor and outdoor. Energy Saving Lamps can only be made in GLS dimensions and shape when Pb-containing amalgam can be applied.

The total annual amount of lead in this application is about 300 kg (assuming that 15 Million out of 150 Million CFL-I lamps sold across Europe contain max. 20 mg Pb contained in amalgam (total EU market, 2004 figures).

Summary of justification for exemption

The applicant justifies the request for exemption considering several criteria:

- Technically: Alternative, Pb-free amalgams are not able to create optimum Hg pressure in ESL's with GLS-equivalent dimensions. Consequently either light output will be less when maintaining GLS dimensions, or product dimensions will be significantly bigger when maintaining the light output. This design change must be regarded as technically impracticable since not meeting consumer requirements.
- Environment:
  - Substitution to non-lead containing amalgams greatly limits the possibility to downsize CFL-I lamps to the size and shape of GLS bulbs (especially for the higher CFL-I wattages i.e. equivalents of 60/75/100W GLS lamps). Size reduction is vital for the acceptance of ESL's as replacement for GLS lamps.

- The conclusion of Life-Cycle Analysis is that most of the environmental impact of fluorescent lamps is generated in the usage phase. Substitution by non-lead containing products would lead to increased Hg and Pb emissions into the environment during electricity generation.

- Environment / Costs:
  - The exemption of Pb in amalgam of Compact Fluorescent enhances the opportunity to replace all incandescent lamps. Pb-containing amalgams enable size reductions up to 20% for GLS-shaped ESL), without negative cost implications. This eliminates one of the main reasons for non-users not to buy ESL's.

Final recommendation

Basically this exemption request should be granted according to Article 5 (1) b, as no substitutes are existent providing the functionality. Even this functionality is crucial in order to downsize CFL-I lamps to the size and shape of GLS bulbs and therefore to enlarge acceptance for Energy Saving Lamps.

Information delivered by the applicant is complete and comprehensible. However the exemption should be restricted for the time period the applicant mentioned to be necessary before alternatives without drawbacks will be released.

Against this background we suggest the following wording:

"Lead with PbBiSn-Hg and PbInSn-Hg in specific

compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very

compact Energy Saving Lamps (ESL)."

5.8 Mercury free flat panel lamp

Requested exemption

The European Lamp Companies Federation (ELCF) requests an exemption for mercury free flat panel lamp assembled by using lead containing glass solder. The total annual amount of lead in this application is about 60 kg (total EU market).

Summary of justification for exemption

The applicant justifies the request for exemption considering several criteria:

- Technically: Mercury free flat panels without lead are not available. At present no lead-free glass solders/frits is available which can meet the process requirements. Development of lead free flat panel lamps could possibly be finished within a 2 years time frame, but the outcome of the lead-free frit development is not predictable.
- Environment: The panels are the first generation of mercury free flat panels; in case of breakage or at end of life there is no impact of mercury like on usual flat panels. The