

Consultation Questionnaire Exemption No. 4(f) of RoHS Annex III

Current wording of the exemption:

Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex

Requested validity period: Maximum (5 years and 7 years (cat. 8 and 9) respectively)

ACRONYMS AND DEFINITIONS

UV	Ultra Violet
LED	Light-Emitting-Diode
Hg	Mercury
LEU	LightingEurope

1. INTRODUCTION

1.1. Background

Bio Innovation Service, UNITAR and Fraunhofer IZM have been appointed¹ by the European Commission through for the evaluation of applications for the review of requests for new exemptions and the renewal of exemptions currently listed in Annexes III and IV of the RoHS Directive 2011/65/EU.

VDMA and Lighting Europe submitted requests² for the renewal of the above-mentioned exemption. The request has been subject to a first completeness and plausibility check. The applicant has been requested to answer additional questions and to provide additional information, available on the request webpage of the stakeholder consultation³.

The stakeholder consultation is part of the review process for the request at hand. The objective of this consultation and the review process is to collect and to evaluate information and evidence according to the criteria listed in Art. 5(1)(a) of Directive 2011/65/EU.⁴

To contribute to this stakeholder consultation, please answer the below questions until the 27th of May 2021.

¹ It is implemented through the specific contract 070201/2020/832829/ENV.B.3 under the Framework contract ENV.B.3/FRA/2019/0017

² Exemption request available at [RoHS Annex III exemption evaluation - Stakeholder consultation \(biois.eu\)](#)

³ Clarification questionnaire available at [RoHS Annex III exemption evaluation - Stakeholder consultation \(biois.eu\)](#)

⁴ Directive 2011/65/EU (RoHS) available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011L0065:EN:NOT>

1.2. Summary of the Exemption Request

According to VDMA: “The application for prolongation of the existing exemption refers to mercury-containing UV discharge lamps which are used for curing (e.g. of layers of inks and coatings, adhesives and sealants), for disinfection (e.g. of water, surfaces and air) and for other industrial applications (surface modification, surface activation) The application includes the following lamp types:

- **UV medium-pressure discharge lamps (MPL) for curing, disinfection and other industrial applications** (internal operating pressure > 100 mbar). The UV medium-pressure lamps can be doped with iron, gallium or lead in addition to the mercury they contain.
- **UV low-pressure discharge lamps for special purposes** in the high power range. [...]

Typical applications to be covered by this application include curing, e.g. of inks and coatings, disinfection of water etc., and other industrial applications like surface activation and cleaning.

It is technically not possible to replace mercury in special UV lamps with other materials/chemicals in order to achieve the same widespread radiation distribution. LED-based technologies are increasingly being used, which in certain applications (e.g. curing) also offer many advantages over mercury-containing UV lamps. Nevertheless, LED technologies cannot be used as an equivalent replacement in many applications. ”

According to LightingEurope, “[...] The renewal application concerns lamps and UV light sources defined as:

- High Pressure Sodium (vapour) lamps (HPS) for horticulture lighting,
- Medium and high-pressure UV lamps for curing, disinfection of water and surfaces, day simulation for zoo animals, etc...
- Short-arc Hg lamps for projection, studio, stage lighting, microlithography for semiconductor production, etc...

Replacement of mercury and mercury containing lamps is impracticable:

- The lamps covered by exemption 4(f) must remain available on the EU market:
 - o For new equipment for certain applications where no functionally suitable alternatives are available
 - o As spare parts for in-use equipment as replacing end-of-life lamps avoids having equipment become electronic waste before due time”

General Statement

We are a producer of Paints and Coatings which are cured using UV radiation provided by Mercury lamps. Our Headquarter is based in Amsterdam (NL). We have production sites for Paints and Coatings in several countries in Europe and employ several thousand people in Europe. We manufacture the following products: Metal Coatings (e.g. can) and Coatings for Wood e.g. parquet lacquers. Our customers use UV lamps for the following applications: windows and doors, panels, flooring, kitchen, bathrooms and furniture and coatings for metal

Our annual consumption of lamps is: We do not consume lamps, but our clients do.

Our experiences with alternatives to UV lamps are as follows: It is our understanding that the alternatives to mercury lamps are not as efficient. The curing process require the wide range of wavelengths and energy output that the lamps used today provide.

UV lamps are still required for the following reasons: UV-surface treatment is an important technology for treatment of wooden products with high durability requirements. The formulations of the coating products are specifically adapted to the lamps used for curing. The efficiency of the curing is critical for the coating to function as intended and increase the life-length of the treated products. To achieve a scratch-resistant, chemical-resistant coating it is vital that the curing process is efficient. The durability of the coating is an important factor in the life cycle assessment of treated products.

Specific Statements

2. QUESTIONS

1. VDMA and LightingEurope² requested the renewal of the above exemption for the maximum validity periods with the same scope and wording for all EEE of cat. 3 and 5 (VDMA) and cat. 1-10 (LEU).
 - a. Please let us know whether you support or disagree with the wording, scope and requested duration of the exemption. To support your views, please provide detailed technical argumentation / evidence in line with the criteria⁴ in Art. 5(1)(a).

The reasons are: Development of new coatings based on fundamentally different chemistries takes multiple year. The development of such coatings is a tailor-made process together with our Clients. At the moment no suitable alternatives are available nor approved by our customers.

- b. If applicable, please suggest an alternative wording and duration and explain your proposal.

From our perspective shorting of the period of validity is unrealistic and implies uncertainty in the supply chain. Next to that it has not been proven that alternatives such as UV LEDs have the same radiation density as the conventional Mercury lamps. A one to one replacement of the lamps is not likely to be foreseen. Changes in coating compositions need to be optimized which is a lengthy process and will take several years.

Therefore, the wording of the exception: "Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex" should therefore be retained unchanged.

Our paints and coatings need a certain amount of intensity of UV radiation, which is not yet available from other sources than Mercury lamps. Development of alternative systems needing less energy and hence less intense UV radiation will take at least a couple of years, hence the Mercury lamps are needed for the foreseeable future.

2. Please provide information concerning possible substitutes or elimination possibilities at present or in the future so that the requested exemption could be restricted or revoked.
 - a. Please explain substitution and elimination possibilities and for which part of the applications in the scope of the requested exemption they are relevant.

Alternative sources of high-density UV radiation with the correct spectral distribution are not known to us. Hence replacement would be a serious hindrance to the use of UV curable coatings. The coatings have very special properties, which will be lost. Drying time of the alternatives will increase which will lead to either lower production rates at our customers or lower product quality. The use of e.g. UV LEDs lead to softer coatings in wood finishes. As a result of that properties like scratch resistance will decrease, which is undesirable for our customers.

- b. Please provide information as to research to find alternatives that do not rely on the exemption under review (substitution or elimination), and which may cover part or all of the applications in the scope of the exemption request.

Any change in the process at our customers lead to major costs. Varying from adaptation of production line to complete new product development at our side.

- c. Please provide a roadmap of such on-going substitution/elimination and research (phases that are to be carried out), detailing the current status as well as the estimated time needed for further stages.

We do not disclose information on our Research programs.

3. Do you know of other manufacturers producing devices of comparable features and performance like the ones in the scope of this exemption request that do not depend on RoHS-restricted substances, or use smaller amounts of these substances compared to the applications in the scope of this exemption?

A full 1:1 solution is not known.

4. As part of the evaluation, socio-economic impacts shall also be compiled and evaluated. For this purpose, if you have information on socioeconomic aspects, please provide details in respect of the following:

- a. What are the volumes of EEE in the scope of the requested exemptions which are placed on the market per year?

We know that our coatings are used by several customers. We have no insight in the market of Mercury lamps and their turnover whilst replaced if faulty.

- b. What are the volumes of additional waste to be generated should the requested exemption not be renewed or not be renewed for the requested duration?

Moving to alternative solutions would result in demolishing the current production lines. A total redesign of the production line will be necessary. This will require investments at our customers, for which no increased profit will be generated. Some of our customers will have to abandon the business. Which will lead to job losses.

- c. What are estimated impacts on employment in total, in the EU and outside the EU, should the requested exemption not be renewed or be renewed for less than the requested time period? Please detail the main sectors in which possible impacts are expected – manufacturers of equipment in the scope of the exemption, suppliers, retail, users of MRI devices, etc.

See section b.

The following business area would be discontinued: Coatings for Wood and Metal are likely to diminish.

- d. Please estimate additional costs associated should the requested exemption not be renewed, and how this is divided between various sectors (e.g. private, public, industry: manufacturers, suppliers, retailers).

We do not have figures on exact number of job losses nor investments needed resulting from a ban on Mercury lamps. Nevertheless, the supply chain of all kind of products using UV curable coatings will be disturbed. This will lead to changes at our customers of which some will either change to lower quality products or will stop the business.

5. Any additional information which you would like to provide?

Society can only function if both parties Authorities as well as Industry behave in a trustworthy manner. Hence, we plea for at least a period until 2026 in which Mercury lamps can be used.

Please note that answers to these questions can be published in the stakeholder consultation, which is part of the evaluation of this request. If your answers contain confidential information, please provide a version that can be made public along with a confidential version, in which proprietary information is clearly marked.

Please do not forget to provide your contact details (Name, Organisation, e-mail and phone number) so that the project team can contact you in case there are questions concerning your contribution.