

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 \(biois.eu\)](https://biois.eu/rohs-annex-iii-exemption-evaluation-stakeholder-consultation)

³ Clarification questionnaire available at [RoHS Annex III exemption evaluation - Stakeholder consultation \(biois.eu\)](https://biois.eu/rohs-annex-iii-exemption-evaluation-stakeholder-consultation)

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"*

Statement of the Association of the Austrian Wood Industries

The Association of the Austrian Wood Industries is the respective industrial association, representing the interests of all Austrian wood industries companies. The members are industrial producers of furniture industry, sawmilling industry, wood based panels industry, construction elements industry, such as windows, doors, parquet, prefabricated houses, glued laminated timber and also cross laminated timber, as well as skiing industry.

In 2019 the productions value of the 1266 member companies amounted up to € 8,29 M, the exports to almost € 6 M (€ 5,975). In total, the member companies employ 27.500 employees.

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).

We support the wording, scope and requested duration of the exemption and favour an extension of the exemption until at least until 2026, even if not beyond.

In the production process in several of our subsectors, such as windows, doors, parquet, wood based panels, furniture boards and even furniture, etc. the mercury lamps are broadly used and still the state-of-the-art technology. There are no practical and technical solutions for an elimination or substitution. The advantages of these lamps are proven both scientifically and technically. No suitable alternatives will be available within the next years.

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

From our industrial point of view, a shorter period of validity does not make sense, because the development of alternative solutions (e.g., based on UV LEDs) will still need some time. Alternative technologies are not at market level or suitable, as the production process is focused on this technology and optimized thereon with regard to performance and efficiency. Some coating systems are streamlined to this technology. Regarding the actual and future developments/processes/products, the availability of these lamps containing mercury is of utmost importance for the production of these products as no reliable alternatives are available.

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.

No alternatives to mercury in discharge lamps (i.e., an "alternative filling") are suitable for direct 100% replacement.

There are other mercury free types of discharge lamps and other light sources like UV LEDs available, which can, to some extent, be used for similar processes.

But their limitations are e.g.:

- Direct replacement (exchanging only the lamp) is not possible in several production lines
- Replacement of existing machines/processes with alternative light sources (if available) usually
- Requires additional steps, which may include:
 - Replacement of power supplies and peripheral electrical components
 - Replacement or alteration of inks and varnishes
 - Installation of active cooling systems due to necessity of higher energy due to higher distance to the substrate
 - Necessity for (other) pretreatment technology
 - Change of UV measurement equipment (different spectral sensitivity)
 - Change of process speeds (usually substantial speed and productivity decrease) due to the need of higher energy when using UV LED
 - Redesign of the overall machine equipment

- Complications like cross sensitivity to daylight and/or artificial lighting
- Lack of functional photoinitiators
- Reduced speed of the production process
- With respect to varnishes, replacement technologies based on LEDs usually can not provide the same degree of surface hardness, scratch resistance and product durability (for the needs of the wood industry)

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.

Alternatives to the actual production lines are not suitable. The companies would have to change the production lines as such.

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.

This question cannot be answered by the processing industry, but has to be answered by the corresponding industry.

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?

As a replacement of existing installations and production lines is not easily possible, there is also no comparable product or device on the market with comparable performance. If companies have specific applications the overall system and the handling of the production process (materials, etc.) would have to be adapted and changed. As the actual lamp is part of a quite complex system, there are no alternatives given at the moment.

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 do not know exact figures describing the whole market. But if someone considers the actual broad use, it is quite many.

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?

If the lamps are no longer available it is not only the lamps that will have to be disposed, but also all UV curing lines including all machines would not be useable any more. This would lead to the elimination of several production lines.

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, re-tail, users of MRI devices, etc.

An estimation is very difficult. Most employers of mercury based UV technology would be confronted with a loss of their workplace. Besides also the processing industry would have to react and change its production process.

- 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).

It is difficult to estimate. But if the availability would end immediately the existing systems might not be used appropriately and thus could endanger all industries using this kind of lamp.

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

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.