

# 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 appointed<sup>1</sup> 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 requests<sup>2</sup> for the renewal of the above-mentioned exemption. The request has been subject to a first completeness and plausibility check. The applicant has been re-quested to answer additional questions and to provide additional information, available on the request webpage of the stakeholder consultation<sup>3</sup>.

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.<sup>4</sup>

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

---

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

<sup>2</sup> Exemption request available at [RoHS Annex III exemption evaluation - Stakeholder consultation \(biois.eu\)](https://biois.eu)

<sup>3</sup> Clarification questionnaire available at [RoHS Annex III exemption evaluation - Stakeholder consultation \(biois.eu\)](https://biois.eu)

<sup>4</sup> 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”

### Contact

Robert Bürkle GmbH  
Stuttgarter Str. 123  
D-72250 Freudenstadt

Philip Schnurr  
Tel.: +49-(0)7441-58-305  
[p.schnurr@buerkle-gmbh.de](mailto:p.schnurr@buerkle-gmbh.de)

### General Statement

We are a producer of machines and complete factory lines based in Freudenstadt/GERMANY and employ more than 450 people worldwide.

We manufacture the following products: machines for surface finishing and press technologies including the whole periphery of a production line e.g. handling, pre-treating, coating, drying/curing, stacking.

We use UV lamps for the following applications: curing of UV-based coatings like varnishes on wood, metal and glass substrates; photochemical substances for solar panels

We are selling/using in our curing-machines approximately 400 pieces of lamps per year.

Our experiences with alternatives to UV lamps are as follows: They are working just for specific applications and can not replace mercury filled lamps by 100%.

## 2. QUESTIONS

1. VDMA and LightingEurope<sup>2</sup> 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 criteria<sup>4</sup> in Art. 5(1)(a).

The wording should be retained, and an extension should be requested at least until 2026 and beyond. The reasons are:

- There is no alternative technical solution available for the mainly used coatings in our industries

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

As a machine engineering company for coating and curing processes there is no alternative technical solution available that we can use in our UV-curing machines having the same function to finish the UV-coating process reliably in all applications. Therefore, in our point of view the shortening of the period of validity makes no sense as long as there are no completely fitting alternatives developed, especially a solution for UVC-area. UV-LED-technologies cannot fulfil these requirements until now and there is no solution in sight now.

With regard to the following current and future developments/processes/products, the availability of UV lamps containing mercury is indispensable for our company:

- Specific curing processes for UV-coatings in e.g. wood-, stone-, automotive-, glass- & solar-industry

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.

For our customers there are three types of alternatives compared to using conventional UV-coatings:

- using specific coatings that can be cured by UV-LED-lamps. Changing the whole coating process to these coatings means many disadvantages, e.g., not the same surface characteristics (hardness, scratch resistance, product durability etc.), lower economic efficiency because of higher invest costs and higher cost of the coating material
- using non-UV-coatings that are cured just by thermal energy. Replacing UV-coatings by non-UV-coatings means a need of much more curing time because thermal energy transfer by convection (using hot air) is less efficient. As a result,

coating lines would need multiple space in the factories, much more invest costs, more raw materials and a higher energy consumption. Furthermore, it is not possible to get the same surface characteristics as with UV-coatings in many cases.

- Using non-UV-coatings on solvent base. Using solvent based coatings would mean much higher emissions of VOC (Volatile Organic Compounds). Also surface hardness, scratch resistance etc. are not guaranteed to be comparable to UV-coatings in all applications.

- 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.

According to our experience, replacement of existing UV lamp system with alternatives leads to a manifold of problems including quality issues, process downtime, productivity decrease, high investment costs, higher overall operational costs.

- 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.

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?

Since 100% replacement on existing installations is not possible, there is also no comparable product or device available with comparable features and performance.

Alternative products, when used with the alternative peripherals (other inks, varnishes, pre-treatment, ...), can have comparable features and performance in some applications (e.g., ink jet printing, general printing) but by for not in all other applications which need the specific spectrum of mercury for their performance.

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

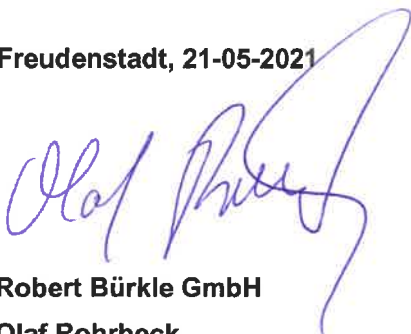
See confidential version answer 4c)

- 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).
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.**

**Freudenstadt, 21-05-2021**



**Robert Bürkle GmbH  
Olaf Rohrbeck  
Managing Director**