

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

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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)

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## 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 requested 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.

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<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/rohs-annex-iii-exemption-evaluation-stakeholder-consultation)

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

<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”

#### General Statement

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We are producers of sticker labels and printed films, we employ 60 employees. We use UV lamps in our printing machines UV lamps are used in 100% of our products. We consume 50 lamps per year. The use of mercury UV lamps is vital to our business. So far, we do not see any reliable alternative that covers all fields of mercury lamp use. And even the migration to other techniques that replace mercury UV lamps remains expensive and beyond the capabilities of our society. Therefore, the ban on mercury UV lamps can lead to the closure of our business.

## 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).

**1. a.** Please extend the exemption until 2026 for the following reasons: You can't change UV lamps in other ways. Technically, UV lamp replacements have not yet been proven. Moreover, alternatives to UV lamps require specific consumables that are not available in quantities and qualities required. Financially, we cannot withstand the complete change of UV lamps with an even more expensive solution without reliable results.

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

**1. b.** Offering a duration doesn't make much sense. Industrial developments take a long time to test and establish themselves as reliable solutions. In the meantime, if we ban mercury UV lamps, we kill an entire subsidiary in print that will no longer be able to meet the demand of an increasingly demanding clientele in terms of quality. A quality that can only be achieved today with UV printing and with mercury UV lamps

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.

**2. a.** The periodic table of chemical elements does not provide a chemical element capable of replacing 100% mercury in discharge lamps. The physico-chemical characteristics of mercury make it the ideal material for discharge lamps (high steam pressure, low boiling temperature, emission in the ideal spectrum for photochemical reactions). Scientific research, conducted for decades, aimed at finding an alternative substance has so far yielded nothing. Other mercury-free lamps or light sources such

as UV-LEDs exist but they still have serious limitations, we quote: In most cases, replacing lamps in UV systems is not enough. It is usually necessary to completely change the UV drying system as well as the series of ink and varnish used, or even the media used. Exorbitant costs of retrofit equipment over a short period of time. For some varnishes, alternative drying solutions to mercury UV lamps penalize the desired surface properties: Hardness, abrasion resistance, durability, etc.

- 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.

**2. b.** According to the market and technology studies we have carried out, the current alternative solutions to mercury UV lamps cannot be implemented for several reasons: quality limitations, reduced productivity, high operating costs, exorbitant investment 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.

**2. c.** We really don't see a clear and complete roadmap to replace mercury UV lamps. Alternative solutions can be considered when negotiating new investments and for very specific and limited applications. But a total replacement of the existing one remains absurd.

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?

**3.** Since it is not possible to replace existing facilities 100%, there is also no comparable product or device with comparable characteristics and performance. Alternative products, when used with alternative devices (other inks, varnish, pre-processing, etc.), may have comparable characteristics and performance in some applications (for example, inkjet printing, general printing) but not in all other applications that require 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?

**4. a.** We do not have an exact idea but the market is huge. New equipment using mercury lamp systems continues to account for the bulk of global sales.

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?

**4. b.** It should be considered that most existing machines on the market operate with mercury discharge lamps. They will be additional waste and should be disposed of. In many cases, it is not economically and/or technologically possible to equip existing equipment with alternative light sources. If UV lamps are no longer available, our entire printing process and machines are no longer usable. This would result in a total shutdown of our business.

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.

**4. c.** Stopping the activity due to the lack of mercury UV lamps will necessarily put all our staff out of work. If we look at the whole market, we are going to be with hundreds of unemployed people in the sector.

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).

**4. d.** Hundreds of people are unemployed. Migration to expensive new machines/equipment without being able to cover the scopes of mercury UV lamps. Costs of disposing of machines and equipment that have become unusable is also expensive. Loss of product diversity, as all products can no longer be manufactured for technological and/or economic reasons. Our business would cease to exist.

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.**