

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"*

General Statement

Venture Lighting are manufacturers of HPS and Metal lamps and also factor HPS and Metal Halide lamps with partner companies, having factories located in India and China employing some 1200 personnel, enabling the annual production of circa 6 million lamps

A proportion of these lamps are used in the horticultural industry, noting these lamps are a design variation of standard technology lamps, already agreed as exempt.

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

Reference to RoHS Art. 5(1)(a): Exemptions for materials and components may be considered, if:

- *"their elimination or substitution via design changes or materials and components [...] is scientifically or technically impracticable"*
- *"the reliability of substitutes is not ensured"*
- *"the total negative environmental, health and consumer safety impacts caused by substitution are likely to outweigh the total environmental, health and consumer safety benefits thereof"*

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

Keep existing wording as above

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

It is understood that LED's are an excellent alternative light source and are readily available, however, for true horticultural applications, the necessary overall range of wavelengths required for plant growth is not available from mainstream LED's used in general lighting, especially UV LEDs and Far-Red LED's.

The light required specifically for plant growth is measured in PAR (umol/sec), which mercury containing HPS lamps deliver extremely well and are 5 times more capable than an LED equivalent.

Although, LED light sources are available, they are large and very costly, some 20 or 30 times more expensive, a typical LED cost being circa £700 compared to existing mercury based lamps at circa £25.

For home users, estimated in the millions, the upgrade cost is simply unreachable and for professional users, depending upon the size of their greenhouses, replacement and refit costs will be tens of thousands of pounds.

Light Source	PAR (µmol/sec)	Fixture Prices	PAR/££
HID 1000W HPS (Gavita Pro 1000 DE)	2100	£214	9.81
HID 600W HPS (Gavita Pro 600 SE)	1150	£158	7.27
Gavita Pro 1700e LED 645W	1700	£860	1.97
Sunmaster Square-root 670W	1550	£677	2.28
Fluence SPYDR 2i47 631W	1700	£862	1.97

Unlike the car industry, where battery cars are enforced, it's possible to provide cheaper versions, that will transport persons from A to B although in lesser comfort but with horticultural lighting you need a specific amount of light (measured in uMols), which cannot be cheapened or degraded and therefore the full expensive light source is required.

- a. 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.

Mercury is the only element capable of providing the necessary light output and thorough research has proven alternative elements are not available

- b. 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.

Venture does not know of a road map to reduce Mercury because technically this is not possible. Mercury is the only element capable of provided the necessary light output.
LEDs as a substitute is not financially viable

- 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?

Other manufactures including Venture have alternatives but as explained the extreme cost is not tolerable

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?

Unfortunately, we do not know exact figures describing the whole market of 4(f).

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?

All existing luminaires on the market running with mercury discharge lamps would have to be considered as additional waste and would have to be disposed of. In many cases, it is technologically not feasible to retrofit existing equipment with alternative light sources.

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.

Most employers of mercury-based technology lamps confronted with a professional ban, would have unemployment and loss of products and productivity. Many companies and factories would stop existing.

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).

Heavy investment costs for companies into new machinery and production methods, at the same time costs for disposal of no longer usable machines and equipment

Customers would have to perform "significant" investments in new luminaires

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

We believe that the responsible authors of the pending mercury ban dramatically underestimate the global impact of a mercury ban on industries, products, markets, and lastly employment opportunities and end consumers.

The dramatic socio-economic outcome of a mercury-ban bears no meaningful relation to the comparatively very small amount of mercury that is really brought into the market by mercury-containing discharge lamps. Used lamps can be recycled and the mercury content can be reused for new lamps. If all participants in the market actively use the recycling opportunities, the mercury content for discharge lamps can be confined to closed-loop processes without damage or impact to the environment and personal health.

We would like to strongly encourage policy makers to invest their effort into a well-organised recycling system including increasing the public awareness on the necessity of actively participating in the recycling loop. This is a win-win situation for all involved parties to the best outcome of having the best technologies available for the specific needs and without banning certain products, machines, technologies or markets for "the worse".

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.