

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

Statement of

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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 re-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.

1.2. 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”*

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>

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 re-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).

Der Wortlaut der Ausnahme sollte beibehalten werden. Eine Verlängerung um mindestens weitere 5 Jahre ist im Hinblick auf fehlende Alternativen erforderlich. Wir sind seit über 35 Jahren Hersteller von UV-Geräten zur Desinfektion von Luft und Wasser und setzen Quecksilberdampf-Niederdruckstrahler ein. Die UV-Strahlungsemission liegt bei diesen Strahlern mit sehr guter Ausbeute bei der Wellenlänge 253,7 nm. Diese Wellenlänge liegt sehr nahe bei der Wellenlänge 260 nm, bei der durch photochemische Änderungen genau die zur Desinfektion erforderliche Schädigung der Viren- und Bakterien-DNA erreicht wird.

Gegenwärtig sind keine alternativen Strahlenquellen verfügbar, die auch nur annähernd die erforderliche Leistung zur Desinfektion von mehreren 100 m³/h Wasser oder mehreren 1.000 m³/h Luft erreichen.

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

Eine Verkürzung der gegenwärtigen Geltungsdauer würde bedeuten, dass die physikalische UV-Desinfektion nicht mehr einsetzbar ist und aus den oben genannten Gründen die alte und inzwischen unerwünschte chemische Desinfektion z.B. mittels Chlor wieder zum Einsatz kommt.

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.

Die gegenwärtig verfügbaren alternativen Strahlungsquellen (LED, Excimere, Ersatz des Quecksilbers durch andere Elemente in den Dampfampfen) erreichen im erforderlichen Strahlungsbereich um 260 nm Bestrahlungsstärken, die maximal nur 0,1% der Bestrahlungsstärken der Quecksilber-Niederdruckstrahlung erreichen.

Die alternativen chemischen Desinfektionsverfahren (Chlor oder Chlordioxid) gelten neben ihren unangenehmen Geruchs- und Geschmacksauswirkungen als sehr gesundheitsschädlich (carcinogen).

- 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.

Bereits in den Jahren 2010 bis 2013 beteiligten wir uns an einem Forschungsvorhaben mit dem Ziel, UV-emittierende LED zu entwickeln und einzusetzen und arbeiten bis heute mit Partnern an diesem Ziel. Ein durchbrechender Erfolg durch ausreichende UV-Leistung trat noch nicht ein. Dieser Erfolg wird frühestens in 8 Jahren erwartet.

- 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.

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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?

Keiner der uns bekannten weltweiten Hersteller setzt gegenwärtig andere alternative Strahlungsquellen für kommerzielle Systeme (d.h. geeignet für die erforderlichen Durchflüsse) ein

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?

In Deutschland wird die jährlich in Verkehr gebrachte Menge an Quecksilber-Niederdruckstrahlern durch das "Elektro-Altgeräte-Register, EAR) erfasst.

- 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?

Sollten keine geeigneten UV-Strahlungsquellen mehr verfügbar sein, müsste unsere Firma geschlossen werden.

Durch die Regelungen durch das "Elektro-Altgeräte-Register (EAR) werden bereits gegenwärtig alte Strahler einer geordneten Entsorgung zugeführt. Diese ist auch im Fall eines plötzlichen Verbotes derartiger Strahler geregelt.

- 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.

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- 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).

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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.

Mit freundlichem Gruß

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