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[1] 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[2] 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[3].

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*

[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)
[3] Clarification questionnaire available at RoHS Annex III exemption evaluation - Stakeholder consultation (biois.eu)
[4] Directive 2011/65/EU (RoHS) available at http://eur-

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:*
  - *For new equipment for certain applications where no functionally suitable alternatives are available*
  - *As spare parts for in-use equipment as replacing end-of-life lamps avoids having equipment become electronic waste before due time"*

2. QUESTIONS

1. VDMA and LightingEurope[2] 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).

Evoqua Water Technologies fully supports the exemption request and endorses the statement which is made by the International Ultraviolet Association (IUVA).

As a manufacturer of UV disinfection products for many industries (including Municipal, Industrial, Aquatics, Aquaculture…), the UV lamps covered by this exemption are used in all our UV disinfection products. For our UV disinfection products there are currently no viable alternatives and as such the exemption should continue for at least the next 5 years.

IUVA Statement Below:

"On behalf of the IUVA Board of Directors, this letter is submitted in support of the submission by Lighting Europe and VDMA concerning mercury containing bulbs.

IUVA is the non-profit trade association dedicated to the advancement of ultraviolet (UV) technologies, with over 700 members worldwide. Europe represents a significant and vital resource in the technical and market development of our technology. UV disinfection processes are commonly acknowledged as environmentally responsible for their low energy use and the absence of chemical byproducts. The technology is widely used in a number of industries including water and wastewater treatment, UV disinfection of ship ballast water, UV disinfection of indoor air, as well as numerous other applications. It must be emphasized that UVC irradiation is one of the most potent technologies for disinfection, i.e.

for the prevention of waterborne infectious diseases, and is therefore of essential importance for public health.

The emergence of UV LEDs and other lamps, such as Xenon lamps, as an alternative to UV mercury lamps is welcomed by our industry. However, presently for many applications, mercury-based lamps are the only viable option. This includes applications where the medium pressure and high-powered low-pressure mercury lamps, that are the subject of this exemption, are used.

An advantage of LED systems, for example, is their instant on/off capability which makes them particularly suitable for applications that have intermittent water demand. However, UV LEDs are not considered a suitable replacement technology for many applications that use the medium pressure or high-powered low-pressure mercury lamps. The lower efficiency (less than 0.05 Watts UVC per Watt input power vs 0.35 for LP and 0.15 for MP systems) can make them uneconomic for use in these applications. The power draw would need to be considered in any evaluation of the overall environmental impact of UV LED as a replacement for mercury-based UV sources.

Furthermore, a ban on higher powered UV lamps may have the unintended consequence of pushing applications to alternate technologies such as chlorine or ozone disinfection, or reverse osmosis with potential adverse environmental and/or carbon footprint impacts.

Therefore, IUVA would like to offer its support to the application to renew the Exemption 4(f) in Annex III of RoHS, as proposed by Lighting Europe and VDMA."

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.

See answer 1

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?

See answer 1

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:

See answer 1

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

See answer 1

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.

27th May 2021

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Evoqua Water Technologies is a leading provider of water and wastewater treatment solutions, offering a broad portfolio of products, services and expertise to support industrial, municipal and recreational customers.

Water plays an instrumental role in so many aspects of daily life beyond drinking water. Evoqua provides solutions for customers with critical water needs for energy generation, food & beverage safety and production, healthcare, manufacturing and many more. We understand and value the power of water to enhance life and we work to ensure its uninterrupted quantity and quality.

Our world-class expertise and ever-expanding portfolio of products has established Evoqua as the trusted advisor to municipal, industrial and recreational customers worldwide.

Headquartered in Pittsburgh, Pennsylvania, Evoqua and our brands have over a 100-year heritage of innovation. We help more than 38,000 customers solve water challenges at over 200,000 installations worldwide and operate in more than 160 locations across ten countries. Every day, millions of people and thousands of companies rely on us as their trusted advisor to help them meet their water needs.