onsultation Questionnaire Exemption
Annex III Ex. 4(f)-III

Exemption for
“Mercury in high pressure sodium vapour lamps used for horticulture lighting”

Abbreviations and Definitions

RoHS	Directive 2011/65/EU on the Restriction of Hazardous Substances in Electrical and Electronic Equipment
EEE	Electrical and Electronic Equipment
LED	Light emitting diode
LEU	LightingEurope
Hg	Mercury
HPS	High Pressure Sodium

Background

The Oeko-Institut and Fraunhofer IZM have been appointed by the European Commission, within a framework contract[1], for the evaluation of applications for exemption from Directive 2011/65/EU (RoHS), to be listed in Annexes III and IV of the Directive.

LightingEurope (LEU) has submitted a request for an exemption renewal for a validity period of 5 years. A summary of the main argumentation for justifying the request is provided below. Additional information supporting this request can be found on the request webpage of the stakeholder consultation (https://rohs.exemptions.oeko.info/exemption-consultations/2026-consultation-1).

For further details, please check the exemption request and additional information submitted by the applicant on the request webpage of the stakeholder consultation.

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 (RoHS 2), which can be found under:

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02011L0065-20250101

[1] The contract is implemented through Framework Contract No. ENV.B.3/FRA/2023/0012, led by Ramboll Deutschland GmbH.

If you would like to contribute to the stakeholder consultation, please review the summary of the argumentation provided and answer the questions that follow.

History of the exemption

The exemption 4(f) “Mercury in other discharge lamps for special purposes not specifically mentioned in Annex III” was last assessed in 2015-2016 and split into four applications:

- I) Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex (expired)
- II) Mercury in high pressure mercury vapour lamps used in projectors where an output ≥ 2000 lumen ANSI is required (24 February 2027)
- III) Mercury in high pressure sodium vapour lamps used for horticulture lighting (24 February 2027)
- IV) Lamps emitting light in the ultraviolet spectrum (24 February 2027)

1 Summary of argumentation of applicant on the justification of the exemption

High-pressure sodium vapor lamps containing mercury (Hg) are a technology used to produce a white light with broad peaks in the blue and the red spectral range for plant growing. The Hg broadens the main spectral line of sodium and shifts it into the red. Hg emits blue light. These two broad peaks match the absorption spectrum of plants and are therefore used to accelerate plant growth in horticulture. Hg-containing lamps used for horticulture need to be replaced almost every year.

Hg-free alternatives

LED-based grow systems are available on the market with increasing market share. The device geometry and electrical properties differ significantly between these technologies. LED-based grow systems usually replace the whole HPS-system including luminaires and electronic control gear. The waste that is generated by replacement is mostly (aluminium) housing, reflector, cables, mount or holding part, which could be made of metal or plastics. The printed circuit board can be separated and is WEEE.

The efficiency of light generation for plants is counted in the number of photons per Joule as each photon can only contribute one quantum of energy to the plant’s biochemistry. Thus, efficiencies for horticulture are measured in µmol/J instead of measuring the energy flux in lm/W. LED systems (about 3.5 µmol/J) outperform HPS-systems (1.7 - 2.1 µmol/J).

LEU frames the radiant heat from HPS as an advantage in cold areas to reduce the need for heating. The trace amount of UV-C stimulates the growth of protective plant compounds and suppresses fungal pathogens. LED systems can be custom-designed to emit UV-C.

HPS is mature and well understood.

Any universal cost comparison with LEDs that do not include species, climate zone and local energy costs is limited. Nonetheless, investment costs in changing to LED system mostly pay back within a few years due to lower electricity consumption.

Spare HPS lamps for legacy systems

LED replacements are not available for high-wattage HPS lamps like 1000W. Instead, it requires multiple LEDs close by to reach the same amount of light. The direct replacement of HPS by LED requires a change in the electronic control gear including a removal of the igniter.

Volume of mercury to be placed on the EU market through the exemption

LEU estimates an amount of 19-40 mg of mercury per lamp with up to 300,000 pieces in use annually. The lamps have an annual replacement rate and therefore, up to 10kg of mercury enter the market per year.

2 Questions to stakeholders

Before you start, please fill in your contact details:

Name:

Company:

E-Mail and phone number:

1. Do you agree with the arguments put forward by the applicants? Are there any additional reasons that support the requested extension of the exemption?
2. In your opinion, what reasons oppose the requested extension of the exemption?
3. What is your preference on how to regulate spare HPS lamps for legacy systems? Which concerns should be addressed?
4. How do you assess the overall benefits of substitutes for the environment, health and consumer safety?
5. Are there any other aspects that you believe should be taken into account when assessing this application? Please provide relevant documents and evidence.

Please send your answers to the project email: rohs.exemptions@oeko.de at the latest by 24 July 2026.

Responses submitted electronically will be posted on the RoHS Exemption Website site as they are received unless respondents specifically request that their contribution should not be published. In the latter case, responses should be clearly and visibly marked with the words "Not for publication" and a version for publication should be provided alongside the confidential one.