

## 1st Stakeholder Consultation – Questionnaire for beryllium and its compounds

### Abbreviations

EEE	Electrical and Electronic Equipment
EU	European Commission
IZM	Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration
RoHS	Restriction of certain Hazardous Substances

### Background

The Oeko-Institut and Fraunhofer IZM have been appointed by the European Commission, within a framework contract<sup>1</sup>, among others to support the review of the list of restricted substances and to assess seven substances with a view to their possible future restriction under Directive 2011/65/EU (RoHS 2).

Beryllium and its compounds were specified in the project terms of reference for a detailed assessment. Initial substance information for **beryllium metal and beryllium oxide** are compiled and available on the substance specific webpage of the stakeholder consultation (<http://rohs.exemptions.oeko.info/index.php?id=294>).

The questions below outline the need for information.

### Questions

#### 1. General questions

- a. In past processes for identifying substances of relevance for possible restriction under RoHS, only beryllium metal and beryllium oxide were considered. The current assessment looks at a broader scope in this respect, namely beryllium and its compounds. Please specify, should a restriction be considered, if it should be limited to beryllium metal and beryllium oxide or expanded to include beryllium and its compounds.
- b. Please provide information to support your view, including information as to the use and presence of additional beryllium compounds in EEE placed on the EU market (e.g. beryllium–copper alloy, beryllium sulfate, beryllium chloride etc).

#### 2. Applications in which beryllium metal and beryllium oxide are in use

- a. Please provide information concerning products and applications in which the substances are in use.

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<sup>1</sup> The contract is implemented through Framework Contract No. FWC ENV.A.2/FRA/2015/0008 of 27/03/2015, led by Oeko-Institut e.V.

- i. In your answer please specify if the applications specified are relevant to EEE products and applications or not.
  - ii. Please elaborate if substitution of the substance is already underway in some of these applications in relation to the properties for which beryllium metal and beryllium oxide are used and/or in relation to specific applications in which it is used (for example beryllium copper alloys used in flexible contacts for batteries), and where relevant elaborate, which chemical (substance level) or technology (elimination of the need for beryllium) alternatives may be relevant for this purpose.
- b. Please specify if you are aware, if aside from actual use of the substances, it may be reintroduced in to the material cycle through the use of secondary materials.
- i. Please detail in this case what secondary materials may contain impurities of beryllium or of its compounds (please specify which) and at what concentrations as well as in the production of what components/products such materials are used.
  - ii. If possible please provide detail as to the changing trends of concentrations of beryllium and its compounds in such secondary materials as well as the changing trend of use of the respective secondary material in EEE manufacture.

### **3. Quantities and ranges in which beryllium and its compounds are in use**

- a. Please detail in what applications your company/sector applies beryllium and its compounds and give detail as to the annual amounts of use (please specify which data is relevant for which compound). If an exact volume cannot be specified, please provide a range of use (for example – 50-100 tonnes per annum).
- b. Please provide information as to the ranges of quantities in which you estimate that the substance is applied in general and in the EEE sector.
- c. If substitution has begun or is expected to begin shortly, please estimate how the trend of use is expected to change over the coming years.

### **4. Potential emissions in the waste stream**

- a. Please provide information on how EEE applications containing beryllium and its compounds are managed in the waste phase (with which waste is such EEE collected and what treatment routes are applied)?
- b. In the treatment and the destruction processes of electronic components beryllium oxide can be released and result in health risks for workers. Please detail potentials for emissions in the relevant treatment and disposal processes specified relevant to each application EEE. Please also detail how such impacts can be mitigated and to what degree such practices are applied in recycling facilities in the EU and outside the EU.
- c. Please specify if there is a risk for emissions of additional beryllium compounds.

## 5. Substitution

- a. Please provide details as to the substitution of beryllium and its compounds (as a minimum for beryllium metal, beryllium oxide and beryllium copper alloys):
  - i. For which applications is substitution scientifically or technically not practicable or reliable and why.
  - ii. For which application is substitution underway. Please specify in this respect which alternatives are available on the substance level (substitution) and which are available on the technological level (elimination) and in which of the beryllium applications they can be applied (for example which substitutes can be applied for copper beryllium alloys used in flexible contacts for batteries) .
  - iii. What constraints exist to the implementation of the named substitutes in a specific application area (provide details on costs, reliability, availability, roadmap for substitution, etc.)

## 6. Socio economic impact of a possible restriction

Please provide information as to the socio-economic impacts of a scenario in which beryllium metal and beryllium oxide or beryllium and its compounds are restricted under RoHS. Please specify your answers in relation to specific applications in which the substances are used and/or in relation to the phase-in of specific alternatives in related application areas. Please refer in your answer to possible costs and benefits of various sectors, users, the environment, etc. where possible; please support statements with quantified estimations.

## 7. Further information and comments

The information compiled on these substances for the stakeholder consultation has been prepared as a summary of the publicly available information reviewed so far. If relevant, please provide further information in this regard, that you believe to have additional relevance for this review, as well as references where relevant to support your statements.

**In case parts of your contribution are confidential, please clearly mark relevant text excerpts or provide your contribution in two versions (public /confidential).**

**Finally, please do not forget to provide your contact details (Name, Organisation, e-mail and phone number) so that Oeko-Institut can contact you in case there are questions concerning your contribution.**