Fraunhofer IZM
Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

RoHS 15 – Substances Evaluation

Exemption evaluation methodology|

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Overview

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Background to exemption evaluation methodology

- The methodology was developed based on the practice applied in previous exemption evaluations performed under RoHS, and applies to evaluation of applications for granting, renewing and revoking exemptions
- The objective of the exemption evaluation process is to assess whether an exemption request from the RoHS substance restrictions is justified in the light of the criteria stipulated in RoHS Art. 5(1)(a)
  - The **threshold criteria** – Protection afforded by REACH is not weakened;
  - The **three primary criteria** – fulfillment of one is sufficient to justify an exemption (practicability of substitution; reliability of substitution; environmental, health and consumer safety impacts of substitution);
  - **Additional criteria** to consider for exemptions and their duration – availability of substitutes and the socioeconomic impact of substitution;
  - **Additional criteria** to consider for exemption **duration** - potential adverse impacts on innovation. Life-cycle thinking where relevant.

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Overview of the exemption assessment process

	Clarification Phase	Consultation Phase	Evaluation Phase	Reporting Phase
Consultant Activities	Screening of Application	Preparation of Online Consultation	Evaluation of Application and Stakeholder Inputs	Preparation of Public Report
Communication Means	Clarification Questionnaire	Consultation Questionnaire Public Online Consultation	Questionnaire(s) (Phone Calls, Meetings)	Report
Communication Partners	Applicants	Applicants Stakeholders	Applicants Stakeholders Experts	Applicants Stakeholders Experts European Commission

The clarification phase

- First check of exemption request documents to determine compliance with the minimum information requirements of RoHS Annex V. This is to ensure that information submitted is complete, stringent and comprehensible as a first basis for the evaluation and for stakeholders in the consultation to understand :
- **what** the applicants request, i.e. which substance(s) and which components and/or materials are concerned,
- the **technical background** of the request, i.e. the substance's functionality in devices and components it is used in,
- the **applicants' justification** why the substance cannot or should not be substituted or eliminated **based** on the criteria of **Art. 5(1)(a)**,
- the proposed **exemption wording** and requested **validity** period.

The consultation phase

- A targeted online stakeholder consultation fulfils the requirement of Article 5(7) that requires the Commission to "*consult economic operators, recyclers, treatment operators, environmental organisations and employee and consumer associations and make the comments received publicly available*".
  - Stakeholders are invited to participate: business associations representing manufacturers of the EEE or its components (OEMs and supply chain), manufacturers of the relevant application, waste management operators, but also individual companies and operators.
- The consultation is usually held for 8 weeks on an online platform.
- Stakeholders are asked as to:
  - whether they support, the respective request for exemption, its scope and formulation and its requested duration;
  - Provide information to allow assessing the status of substitution;

The evaluation phase (general)

- **Aim**: the consultants ascertain whether the applicant's justification for the exemption is scientifically and technically substantiated and allows concluding on the practicability of substitution or elimination of the restricted substance.
- **How**: during the evaluation communication with the applicant and relevant stakeholders is performed to clarify information and substantiate the various views (questionnaires, meetings). Experts and manufacturers active on the market may also be questioned and publicly available information may be sought.
- The request is reviewed in relation to the Art. 5(1)(a) criteria – short explanations follow on the next slides.
- Examples are given from the evaluation of requests for exemption for cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting and solid state lighting (LED) applications

The evaluation phase (criteria specific 1)

Threshold criterion: coherence of a future exemption is checked against the existing REACH Authorization (XIV) and Restriction (XVII) annexes;

- Cadmium selenide: Restriction 23 (use in polymers, paints, Cd plating, brazing fillers, metal beads and jewelry)
- Indium phosphide: Restriction 28 (use or supply of substance to general public)

1st and 2nd criteria: it is reviewed if substitutes exist that are scientifically and technically practical and that supply comparable reliability.

- Substitution on the substance level: indium phosphide is also applied in QD applications in displays (marketed) and lighting
- Elimination on the technology level: Other types of display and lighting are available on the market

The evaluation phase (criteria specific 2)

3rd criterion: it is reviewed if the total negative environmental, health and consumer safety impacts of substitution overweigh its benefits. The holistic consideration of environmental and / or health and/or safety-related impacts requires a far more complex methodological approach and is a very data-intensive endeavor.

- **Life Cycle Assessment** (LCA) could be used to derive results supporting this kind of justification for exemptions but only in relation to potential environmental impacts throughout a product's life cycle (see EN ISO 14040:2006) – manual provides guidance; LCA may be combined with other methods to address also health and safety aspects, for example, **risk assessment, exposure assessment, safety analysis**, etc.
- LCA studies have been submitted in the past for CdQD exemptions. In one case it was argued that energy savings of 20-30% resulted in emission reductions of Cd in the order of the Cd used in the display QDs. However, comparisons were based on a display service life equivalent to 30 years, whereas for example in Germany 50% of TVs are disposed of before reaching the age of 10 years.

The evaluation phase (criteria specific 3)

4th criteria: Availability and socioeconomic impact of substitution

- In respect of the 'availability of substitutes' and 'socio-economic impact of substitution', the RoHS FAQ specifies that "*an exemption cannot be based on these parameters only […] not considered to be as significant as the three criteria mentioned above*."
- Where data suggest that the socioeconomic impacts of substitution or the limited availability of the substitutes might reach a level where impacts are comparable to the scientific and technical impracticability of substitution or elimination, i.e. resulting in a market supply gap, or in outweighing the total environmental, health and consumer safety benefits of the substitution an exemption might be justifiable.

5th criteria: Adverse impacts on innovation may be considered in decisions on exemption duration.

- In the case of CdQD exemptions, it has been argued that in the presence of InP QD technologies for displays and lighting an exemption for CdSe QDs could affect the rate of innovation of further developments.

The evaluation phase (exemption duration)

5th criteria: Adverse impacts on innovation may be considered in decisions on exemption duration.

- In the case of CdQD exemptions, it has been argued that in the presence of InP QD technologies for displays and lighting an exemption for CdSe QDs could affect the rate of innovation of further developments.

Decision on the duration of an exemption can also consider:

- Lacking availability of substitutes - where substitution is in principle possible, but the industrial scale production is still in the ramp up phase resulting in undue delivery times in the supply chain;
- The cost of substitutes is prohibitively high in the initial phase until foreseeably more than one manufacturer produces the substitute, thus spurring competition and decreasing prices;
- If a substitute is in development and expected to be market ripe within a few years, specifying a shorter duration would ensure that the assessment is revised when the substitute becomes available to clarify if it is still needed.

The reporting phase

In conclusion of the evaluation a report is prepared documenting:

- the **technical background** of the requested exemption;
- the applicants' and other stakeholders' **justification** why the exemption is required and should be granted;
- other stakeholders' **contra justifications** and arguments why the exemption from their point of view is not required and should therefore not be granted;
- the consultants' assessment or **critical review** of the presented evidence and arguments and of their relation to Article 5(1)(a) – here additional information retrieved from publicly available sources or through contact with relevant experts and professionals is also to be assessed;
- the consultants' conclusions and **recommendation** for the requested exemption(s) including the wording and an expiry date where it is recommended to grant an exemption.

17:35 – 17:50

Discussion on the exemption methodology

- Please ask to be given the floor for a statement using the Webex chat function
- Please keep your statement below two minutes
- Please use the possibility to provide final written comments on the overall results until a week after the webinar

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Article 5(1)(a) criteria for justification of exemptions

The Article 5(1)(a) criteria for justification of exemptions from the RoHS substance restrictions:

"provided that such inclusion does not weaken the environmental and health protection afforded by Regulation (EC) No 1907/2006 : and where any of the following conditions is fulfilled:

[threshold criterion]

- their elimination or substitution via design changes or materials and components which do not require any of the materials or substances listed in Annex II is scientifically or technically impracticable,

[1st criterion]

- the reliability of substitutes is not ensured,

[2nd criterion]

- 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

[3rd criterion]

→ Decisions on the inclusion of materials and components of EEE in the lists in Annexes III and IV and on the duration of any exemptions shall take into account the availability of substitutes and the socioeconomic impact of substitution

[4th criterion]

→ Decisions on the duration of any exemptions shall take into account any potential adverse impacts on innovation. Life-cycle thinking on the overall impacts of the exemption shall apply, where relevant;

[5th criterion]