

## Stakeholder Consultation Questionnaire: Exemption No. 14

***“Hexavalent chromium as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators in motor caravans up to 0,75 weight — % in the cooling solution except where the use of other cooling technologies is practicable (i.e. available on the market for the application in motor caravans) and does not lead to negative environmental, health and/or consumer safety impacts “***

### Abbreviations and Definitions

CrVI                  Hexavalent Chromium

### Background

The Oeko-Institut and Fraunhofer IZM have been appointed by the European Commission, within a framework contract<sup>1</sup>, for the review of exemptions in Annex II of Directive 2000/53/EC (ELV). The aim of this project is to evaluate whether the use of hexavalent chromium in the above mentioned exemption is still unavoidable and if the continuation of the exemption is therefore justified in line with Art. (4)(2)(b)(ii) of the ELV Directive.

Exemption 14 permits the use of hexavalent chromium as an anti-corrosion agent of the carbon steel cooling system of absorption refrigerators used in motor caravans [...]. CrVI is used as a corrosion inhibitor in the cooling solution of absorption refrigerators that are operated with a heat source (e.g. gas, electricity or variable heat sources). On the interior tube surface of the cooling system, there is a thin corrosion protective layer of chromium oxide (Cr<sub>2</sub>O<sub>3</sub>). If this layer is damaged, it will be replenished by the sodium dichromate (CrVI) available in the cooling solution. Thereby, CrVI is reduced to the less toxic trivalent chromium (CrIII).

A corresponding exemption exists as exemption 9 of Annex III of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS). In a review performed in 2015-2016 of exemption 9 of the RoHS Directive, it was recommended to amend the exemption so as to address applications separately, corresponding to the timeframe needed for the expected substitution of CrVI. The final formulation recommended by Oeko-Institut e.V. was specified as specified in Table 1<sup>2</sup>. The amendment of the exemption is still pending and it is still possible that the European Commission shall further adapt the formulation to align it with the REACH Regulation, i.e. with additional parameters mentioned in the context of the REACH Authorisation, namely the electrical power input (see detail below).

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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.

<sup>2</sup> [http://rohs.exemptions.oeko.info/fileadmin/user\\_upload/reports/Exemption\\_9\\_Recomendation\\_amendment\\_20180319.pdf](http://rohs.exemptions.oeko.info/fileadmin/user_upload/reports/Exemption_9_Recomendation_amendment_20180319.pdf)

**Table 1: Amended formulation recommended for exemption 9 of Annex III of Directive 2011/65/EU (RoHS 2)**

<b>Exemption 9</b>	<b>Duration*</b>
Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	Expires on: <ul style="list-style-type: none"> <li>• 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments;</li> <li>• 21 July 2023 for category 8 in vitro diagnostic medical devices;</li> <li>• 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11."</li> </ul>
(I) designed to operate with electrical heater only;	For Cat. 1: 31.12.2019 (*date aligned with REACH authorization REACH/17/7/0)
(II) designed to operate with variable energy sources;	For Cat. 1: 21.7.2021 (five years)
(III) designed to operate with other than an electrical heater;	

In parallel, CrVI used in absorption refrigerators has also been reviewed in the context of the REACH Annex XIV list of authorized substances. A decision of the of European Commission on an authorization for the placing on the market for the use and/or for use of substances listed in Annex XIV to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) was published in February 2017 and authorizes the following uses:<sup>3</sup>

**Table 2: Authorised uses of sodium chromate as decided by the European Commission**

<b>Authorised use of sodium chromate</b>	<b>Date of expiry of review period</b>
Use of sodium chromate as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75% by weight (Cr(VI)+) in the cooling solution. This covers the use in 'low boiler temperature products' (minibars).	31 December 2019
Use of sodium chromate as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75% by weight (Cr(VI)+) in the cooling solution. This covers the use in 'high boiler temperature products' (recreational vehicles refrigerators and medical cold equipment).	21 September 2029

<sup>3</sup> Summary of European Commission Decisions on authorisations for the placing on the market for the use and/or for use of substances listed in Annex XIV to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) at [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0215\(09\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0215(09)&from=EN)

Against the background of both the RoHS and the REACH proceedings regarding CrVI used in absorption refrigerators, the Commission has decided to review Ex. 14 of the ELV Directive, to see whether it needs to be amended in relation to scientific and technical progress.

This questionnaire has been prepared for the stakeholder consultation held as part of the evaluation. 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. (4)(2)(b)(ii) of Directive 2000/53/EC (ELV), which you can download from here:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0053>

Additional background information can be found on the exemption page accessible through the following link: <http://elv.exemptions.oeko.info/index.php?id=71>

If you would like to contribute to the stakeholder consultation, please answer the following questions:

### Questions

1. Please explain whether the use of CrVI in the application addressed under Ex. 14 of the ELV Directive is still unavoidable so that Art. 4(2)(b)(ii) of the ELV Directive would justify the continuation of the exemption.
2. If the substitution of CrVI is still not possible, please explain the efforts your organisation has undertaken to find and implement the use of hexavalent chromium-free alternatives in the manufacture of absorption refrigerators used in motor caravans. In your answers please refer to alternatives, which reduce the amount of CrVI applied or, which eliminate its necessity altogether.
  - a. Please compare potential alternatives with the CrVI based absorption refrigerators to clarify on a quantitative basis how alternatives perform in relation to the CrVI based absorption refrigerators currently in use in motor caravans in respect of parameters such as:
    - **Type of energy source:** Please refer in your answers to the differentiation made under the RoHS Directive and specify the type of energy source (and thus the boiler temperature) the adsorption refrigerator is designed to operate with.
    - **Other:** Are there any other properties/qualities of relevance for the performance of the absorption refrigerator?
  - b. For alternatives, which still have the potential to develop into a viable candidate, please provide information as to the various research and development stages that are still needed as well as a time range estimation for each stage. Please take into account the timelines given in the REACH Regulation authorisation and in the RoHS exemption.
3. Is the existing ELV exemption still necessary to allow high performance absorption refrigerators with a freezer compartment to be placed to the market? Please clarify how these products correspond to the aspects raised in the REACH and ROHS formulations, i.e. in relation to the various functional parameters (energy source, boiler operation temperature, etc.) and whether they would be covered by the items specified for the RoHS exemption or for the REACH Authorisation?
4. What is the amount of CrVI that would be contained in absorption refrigerators used in vehicles

- a) placed on the EU market and
  - b) worldwide
- in case the exemption remains valid? Please provide a substantiated estimate clarifying how you have arrived at the stated result.
5. Based on prior evaluations, the consultants are aware that absorption refrigerators used in motor caravans are sometimes installed in these vehicles prior to the vehicle being put on the market, whereas in some cases, vehicle owners install such equipment in vehicles on a “do it yourself” basis.
- a. Is there data as to the shares of absorption refrigerators originally installed in motor caravans and the share of “self-installed” equipment?
  - b. Do absorption refrigerators originally installed in motor caravans differ from those “self-installed” by vehicle owners in their design in terms of making use of Ex. 14?
  - c. Is there a difference between how absorption refrigerators originally installed in motor caravans and those “self-installed” by vehicle owners are treated at end-of-life (i.e. how is equipment treated, is equipment treated by ELV recyclers or by EEE recyclers, etc.)?
6. Overall, please specify whether you agree with the necessity to continue the exemption and sum up your arguments for or against its continuation.

**In case parts of your contribution are confidential, please provide your contribution in two versions (public /confidential). Please also note, however, that requested exemptions cannot be granted based on confidential information!**

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