

**Risk Management Option Analysis Conclusion Document**

**Substance Name:** (±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one (4-MBC)

**EC Number:** 253-242-6

**CAS Number:** 36861-47-9

**Authority:** Denmark

**Date:** 03.12.2020

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# Foreword

The purpose of Risk Management Option analysis (RMOA) is to help authorities decide whether further regulatory risk management activities are required for a substance and to identify the most appropriate instrument to address a concern.

RMOA is a voluntary step, i.e., it is not part of the processes as defined in the legislation. For authorities, documenting the RMOA allows the sharing of information and promoting early discussion, which helps lead to a common understanding on the action pursued. A Member State or ECHA (at the request of the Commission) can carry out this case-by-case analysis in order to conclude whether a substance is a 'relevant substance of very high concern (SVHC)' in the sense of the SVHC Roadmap to 2020[[1]](#footnote-1).

An RMOA can conclude that regulatory risk management at EU level is required for a substance (e.g. harmonised classification and labelling, Candidate List inclusion, restriction, other EU legislation) or that no regulatory action is required at EU level. Any subsequent regulatory processes under the REACH Regulation include consultation of interested parties and appropriate decision making involving Member State Competent Authorities and the European Commission as defined in REACH.

This Conclusion document provides the outcome of the RMOA carried out by the author authority. In this conclusion document, the authority considers how the available information collected on the substance can be used to conclude whether regulatory risk management activities are required for a substance and which is the most appropriate instrument to address a concern. With this Conclusion document the Commission, the competent authorities of the other Member States and stakeholders are informed of the considerations of the author authority. In case the author authority proposes in this conclusion document further regulatory risk management measures, this shall not be considered initiating those other measures or processes. Since this document only reflects the views of the author authority, it does not preclude Member States or the European Commission from considering or initiating regulatory risk management measures which they deem appropriate.

### OVERVIEW OF OTHER PROCESSES / EU LEGISLATION

A RMOA on 4-MBC and the similar substance 3-BC was prepared by Germany in June 2015. It concluded that it was appropriate to initiate regulatory risk management actions for these two substances due to their endocrine disrupting properties in the environment. Following the RMOA, Germany proposed to identify the substances as substances of very high concern due to their Equivalent level of concern having probable serious effects to the environment according to REACH Article 57 f. The proposal to identify 3-BC as a substance of very high concern was not unanimously agreed by the Member State Committee but later adopted by the Commission. The proposal to identify 4-MBC as a substance of very high concern was withdrawn in the Member State Committee in order to further elaborate on the justification provided in the dossier. The withdrawal was based on lack of data on the substance. Therefore, 4-MBC is currently being evaluated by Germany under substance evaluation due to a concern for endocrine disrupting properties in the environment.

4-MBC is also listed in the Regulation (EC) No 1223/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 November 2009 on cosmetic products, ANNEX VI: List of UV filters allowed in cosmetic products with a maximum concentration in ready for use preparations of 4%. In a conclusion of the Scientific Committee on Consumer Products (SCCP) 4-MBC is considered to be safe for the use in cosmetic products up to a concentration of 4 %. This opinion is restricted to the safety evaluation of 4-MBC as UV filter after dermal application of a cosmetic product (SCCP, 2008) and it is furthermore stated that risks from inhalation or oral exposure cannot be excluded.

### CONCLUSION OF RMOA

This conclusion is based on the REACH and CLP data as well as other available relevant information taking into account the SVHC Roadmap to 2020, where appropriate.

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| **Conclusions** | **Tick box** |
| Need for follow-up regulatory action at EU level: | X |
| *Harmonised classification and labelling* |  |
| *Identification as SVHC (authorisation)* | X |
| *Restriction under REACH* |  |
| *Other EU-wide regulatory measures* |  |
| Need for action other than EU regulatory action |  |
| No action needed at this time |  |

### Need for follow-up regulatory action at EU level

There is clear evidence that 4-MBC is an endocrine disruptor and that there is a need for further regulatory risk management measures. This conclusion is primarily based on the following effects:

* Thyroid disruption *in vitro* and *in vivo* including changes in circulating thyroid hormone levels. There is a strong biologically plausible link between the thyroid disrupting mode of action seen *in vivo* and the adverse effects on the thyroid gland.
* Estrogenic activity of 4-MBC and evidence showing that 4-MBC may also act as an androgen receptor antagonist and inhibit different enzymes of the steroidogenesis. There is also evidence that these MoAs seem to cause alterations in circulating FSH, LH and GnRH levels *in vivo*.

There is a strong biologically plausible link between the estrogenic mode of action seen *in vitro* and *in vivo*, the anti-androgenic effects seen *in vitro* and the adverse effects seen in peripubertal and adult male and female rats.

* Hormonal changes in males leading to adverse reproductive effects on prostate development and physiology, and evidence that other parts of the male reproductive tract can be adversely affected. In females, there is evidence that combined perinatal and adult exposure can lead to adverse effects on sexual behavior.

Consequently, based on a Weight of Evidence-evaluation, 4-MBC is concluded to meet the WHO definition of an endocrine disruptor with both estrogenic and thyroid disrupting modes of action, leading to adverse reproductive effects in both males and females and adverse effect on the thyroid gland.

4-MBC is considered to have similar properties as 3-BC which has already been identified as a substance of very high concern (SVHC) owing to its endocrine disrupting properties in the environment. Furthermore, 3-BC is banned from use in any cosmetic products marketed for sale or use in the European Union under the Cosmetic Product Regulation. While 3-BC is still to be registered under REACH, 4-MBC was registered in 2018 and is on Annex VIII under REACH with a tonnage of 10-100 tonnes per year. As 4-MBC should not be used as an alternative to 3-BC due to the similar hazard profiles of the two substances, there is a need to apply appropriate risk management measures for 4-MBC.

### Harmonised classification and labelling

Not relevant.

### Identification as a substance of very high concern, SVHC (first step towards authorisation)

Available evidence supports that 4-MBC has endocrine disrupting effects for human health mainly based on estrogenic and thyroidal effects. Identification of 4-MBC as a substance of very high concern is the only mean as to formally identify the substance as an endocrine disruptor. As it is currently not possible to classify for endocrine disrupting properties under CLP, identification of 4-MBC as a substance of very high concern (SVHC) would be the only available possibility to achieve an EU-wide agreement on the endocrine disrupting properties of this substance. SVHC-identification is envisaged to put a pressure on industry to substitute this substance with less hazardous substances and to implement appropriate risk management measures with the aim of reducing human exposure. Furthermore, SVHC identification of 4-MBC is in line with previous activities on the similar substance 3-BC which has already been identified as a substance of very high concern. Thus, the Danish EPA evaluates that identification of 4-MBC as a SVHC possibly followed by inclusion in Annex XIV is the most appropriate risk management measure for this substance since we consider that for the most uses, suitable and safer alternatives are available. The Danish EPA proposes not to await the outcome of the ongoing substance evaluation to clarify the concern for endocrine disrupting properties in the environment.

### Restriction under REACH

Not relevant.

### Other Union-wide regulatory measures

Not relevant.

### Need for action other than EU regulatory action

Not relevant.

### No action needed at this time

Not relevant.

### TENTATIVE PLAN FOR FOLLOW-UP ACTIONS IF NECESSARY

Indication of a tentative plan is not a formal commitment by the authority. A commitment to prepare a REACH Annex XV dossier (SVHC, restrictions) and/or CLP Annex VI dossier should be made via the Registry of Intentions.

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| **Follow-up action** | **Date for follow-up** | **Actor** |
| SVHC identification based on REACH Art. 57(f) | Aug 2021 | Denmark |
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1. For more information on the SVHC Roadmap: <http://echa.europa.eu/addressing-chemicals-of-concern/substances-of-potential-concern/svhc-roadmap-to-2020-implementation> [↑](#footnote-ref-1)