Octinoxate

(CAS number: e.g. 5466-77-3, EC number: 226-775-7 / Entry number in HELCOM list of priority substances: 27)

General sectors: Personal care product

DRIVERS | ACTIVITIES | PRESSURES | STATE | IMPACTS

Why a HELCOM priority?

Main evidence

S Concentrations of Octionoxate exceed the applied threshold value in **16** of the 22 examined areas (assessment units) of the Baltic Sea. The threshold is exceeded in both coastal and off-shore areas (**3**/4 assessed off-shore areas). In these 16 areas, on average **83%** of the assessible samples in **water and/or sediment and/or biota** exceed the threshold value. This is based on monitoring data for the period 2015-2024 available in national and international databases[1]. As well as in suspect screening data from the project PreEMPT[2]. A total number of 94 data points were possible to evaluate for Octionoxate.

By further considering how much above or below the threshold each concentration is, and how often the substance is detected, Octionoxate scores **8.1/10** (confidence range: **4.8 – 8.6**) in the scale established when assessing the criticality/significance of current levels in the Baltic Sea pose, where 5 indicates concern and 10 extreme risk.

The threshold values for Octionoxate were acquired from the NORMAN Network ecotoxicology database[3].

I Current levels in the Baltic Sea indicate potential negative impacts on pelagic and/or sediment dwelling biota, and/or top predators such as mammals and birds.

Supporting evidence

P Approximately **46-540 kg of Octionoxate** are estimated to enter the Baltic Sea every year, via WWTPs/rivers (WATERBASE[4]). Additional inputs might be expected from atmospheric deposition, although the substane degrades fast in air. As well as from direct emissions from bathing. Given that the substance is **suspect as very toxic**[3], current inputs are considered as likely significant, in terms of risk they pose for the Baltic Sea and its ecosystem services. As mentioned above, levels in Baltic Sea have already exceeded thresholds.

Overall assessment

When assessing current levels in the Baltic Sea, current inputs, and the severity of the relevant toxicity mechanism, Octinoxate scores **50-68/100** in the scale established for assessing the overall risk for impacts/threat for the Baltic Sea, where 50 indicates concern and 100 extreme risk.

Facts relevant for management considerations

Causal chain and pathways

A Although the substance is not EU REACH-registered[5] (thus there are no manufacturers or importers of this substance in amounts above 1 tonne/year per company), classification & labelling notifications have been received by ECHA by about 2,000 companies[6]. Therefore, the total amount in the EU market may still be significant. According to the SPIN database, for the period 2017-2021, in Denmark and Sweden the substance was reported in total amounts up to tonnage bands of 1.5 – 150 t/y and 8.8 – 880 t/y respectively[7]. Octinoxate is a UV filter and light stabilizer in cosmetics (e.g. sunscreen products). It is also reported to have been used as UV filter in pharmaceuticals, intermediates and fine chemicals.

P Quantified estimations are available for the riverine pathway to the Baltic Sea (30 - 480 kg, WATERBASE), as well as the direct coastal emissions via WWTPs (16-64 kg, Undeman et al, 2022[8]). As mentioned above, beyond these, potentially atmospheric deposition and direct emissions from bathing might be expected.

S ? *In order to further improve the evaluation of the magnitude of risk, one aspect that could be investigated in the future is a review of the toxicity thresholds (water, sediment, biota).*

Relevant policies (existing or planned measures)

M (on A/P)

- Octionoxate is **listed in the EU Cosmetics Regulation (EC) 1223/2009 (regulated as a UV-filter in sunscreen products in a concentration up to 10 %)**.
- Listed in the first **EQSD Watch List**.

References:

1. 2. 3. 4. 5. 6. 7. 8.

[Note: Listing of detailed references will be provided in an upcoming update of the fact sheet – for a listing of the most common references among the different substances see the section at the end of the consolidated document which includes all the fact sheets]