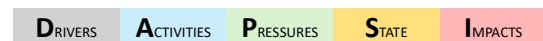


Gabapentin

General sectors: *Pharmaceutical*

(CAS numbers: e.g. 60142-96-3, EC number: 262-076-3

/ Entry number in HELCOM list of priority substances: 18)



Why a HELCOM priority?

Main evidence

S Concentrations of Gabapentin exceed the applied threshold value in **7** of the 10 examined areas (assessment units) of the Baltic Sea. The threshold is exceeded in both coastal and off-shore areas (1/3 assessed off-shore areas). In these 7 areas, on average **68%** of the assessable samples in **water** exceed the threshold value. This is based on monitoring data for the period 2015-2023 as reported by Contracting Parties (CPs) as response to a data call organized by HELCOM, as well as in scientific articles/reports¹ and target screening data from the project LifeAPEX². A total number of 234 data points were possible to evaluate for Gabapentin.

By further considering how much above or below the threshold each concentration is, and how often the substance is detected, Gabapentin scores **7.2/10** (confidence range: **6.9 – 7.8**) 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, and the range reflects the level of reliability and representativeness of concentrations and the thresholds.

The threshold value for Gabapentin, for water, was acquired from Posthuma et al, 2019⁴.

I Current levels in the Baltic Sea indicate potential negative impacts on pelagic biota.

Supporting evidence

I Gabapentin is considered to have an especially **concerning mode of toxicity**. For example, it is toxic for reproduction⁵.

Overall assessment

When assessing current levels in the Baltic Sea, current inputs, and the severity of the relevant toxicity mechanism, Gabapentin scores **62-78/100** in the scale established for assessing the overall risk for impacts/threat for the Baltic Sea, where 50 indicates concern, 100 extreme risk, and the width of the span outlines the uncertainty in the assessment.

Facts relevant for management considerations

Causal chain and pathways

A Gabapentin is an analgesic used as a human pharmaceutical. Its sales in CPs were $\geq 35 - 77$ tonnes/year in the period 2015-2022⁶, with an increasing trend. It has been described as a concern due to suspected non-medical use within Europe (European Monitoring Centre for Drugs and Drug Addiction, 2021⁷).

P It is expected to enter the Baltic Sea via WWTP effluents (both direct and via rivers).

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 threshold (water).*

Relevant policies (existing or planned measures)

M -

References:

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

[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]