Nicosulfuron

General sectors: Pesticide

(CAS numbers: e.g. 111991-09-4, EC numbers: 601-148-4, 686-897-5, 691-662-5 / Entry number in HELCOM list of priority substances: 26)

DRIVERS | ACTIVITIES | PRESSURES | STATE | IMPACTS

Why a HELCOM priority?

Main evidence

S Concentrations of Nicosulfuron exceed the applied threshold value in **4** of the 7 examined areas (assessment units) of the Baltic Sea, noting also, for some of these areas, several inconclusive, in terms of exceedance, non-detections (due to a relatively high limit of detection). The threshold is exceeded in both coastal and off-shore areas (**1**/3 assessed off-shore areas). In these 4 areas, on average **90%*** of the assessible samples in **water and/or sediment** exceed the threshold value. This is based on monitoring data for the period 2015-2024 available in national and international databases[1]. A total number of 38 data points were possible to evaluate for Nicosulfuron.

By further considering how much above or below the threshold each concentration is, and how often the substance is detected, Nicosulfuron scores **7.6/10** (confidence range: **3.9 – 7.9**) 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 values for Nicosulfuron, for water and sediment, were acquired respectively from the EC proposed Directive amending WFD and EQSD[2] and the ecotoxicology database of the NORMAN Network[3].

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

P Approximately **3-40 kg of Nicosulfuron** are estimated to enter the Baltic Sea every year, mainly via rivers (WATERBASE[4]). Additional inputs may be expected from direct runoff from land. Given that the substance is **very persistent and toxic**[5], current inputs are possibly 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, due not only to current but also the historical inputs. The riverine data used for the estimation concerns only measurements in the proximity of river mouths, and the period 2015-2022. The 12 subcatchment areas for which there was such riverine data reflected 3 % of the total riverine flow to the Baltic Sea, to which inputs have been extrapolated. The data in WATERBASE included approximately 3 countries and 198 samples.

Supporting evidence

I Nicosulfuron is considered to have a concerning **mode of toxicity**, as it is inhibits protein biosynthesis[6].

Overall assessment

When assessing current levels in the Baltic Sea, current inputs, and the severity of the relevant toxicity mechanism, Nicosulfuron scores **52-80/100** 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

Current causes, pathways

A The substance is authorized as pesticide in five from the Contracting Parties (CPs) which are members of the EU[7]: Germany, Estonia, Lithuania, Latvia (300 kg/y), and Poland. According to the literature, it is used as herbicide against weeds and grass weeds[8].

Relevant policies (existing or planned measures)

M (on A/P) • Listed as a priority substance under the **EU WFD update proposal**. The EQSD update proposal also includes an EQS for total of active substances in pesticides, including their relevant metabolites, degradation and reaction products. Programmes of Measures (PoMs) may exist for CPs which have included it as additional contaminant in MSFD assessments / River-Basin-Specific Pollutant in WFD assessments.

• Under the EU Regulation 1107/2009 concerning the placing of **plant protection products on the market, it is candidate for substitution**, on the basis of the two PBT criteria. Under the EU Sustainable Use of Pesticides Directive (2009/128/EC), Member States of the EU shall adopt **National Action Plans** to set up their quantitative objectives, targets, measures and timetables to reduce risks and impacts of pesticide use and to encourage the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides.

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]

* considering that there were also inconclusive non-detections (in terms of exceedance, due to a relatively high limit of detection), it is possible that the actual average frequency of exceedance in these areas is lower, but in any case >15%.