

# Diuron

(CAS number: e.g. 330-54-1, EC number: 206-354-4  
/ Entry number in HELCOM list of priority substances: 16)

General sectors: Biocide,  
industry and commercial  
products, off-shore (shipping,  
OWF, aquaculture?), legacy  
pesticide

DRIVERS	ACTIVITIES	PRESSURES	STATE	IMPACTS
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## Why a HELCOM priority?

### Main evidence

**S** Concentrations of Diuron exceed the applied threshold value in 4 of the 22 examined areas (assessment units) of the Baltic Sea. The threshold is exceeded in coastal and potentially also at one off-shore area (1/4 assessed off-shore areas), but at which in addition to exceedances there are also several inconclusive, in terms of exceedance, non-detections (due to a relatively high limit of detection). In these 4 areas, on average 88%\* of the assessable 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<sup>1</sup>. As well as in target screening data from the project PreEMPT<sup>2</sup>. A total number of 117 data points were possible to evaluate for Diuron.

By further considering how much above or below the threshold each concentration is, and how often the substance is detected, Diuron scores **6.8/10** (confidence range: **6.0 – 6.0**) 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 Diuron, for water and sediment, were acquired from the EC proposed Directive amending WFD and EQSD<sup>3</sup>.

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

### Supporting evidence

**P** Approximately **90-150 kg of Diuron** are estimated to enter the Baltic Sea every year, mainly via WWTPs/ivers (WATERBASE<sup>4</sup>; Undemann, 2022<sup>5</sup>). Additional inputs may be expected from off-shore activities (see under Activities below). Given that the substance is **suspect as persistent and is very toxic**<sup>6</sup>, current inputs are considered as 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.

**I** Diuron is considered to have a concerning **mode of toxicity**, as for example it is a possible carcinogen<sup>7</sup> as well as photosynthesis inhibitor<sup>7</sup>. Photosynthesis inhibitors: disrupt energy production or utilization and can affect growth and overall fitness of primary producing marine organisms. Furthermore, an Effect-Directed-Analysis study in the North-East Atlantic has revealed this substance as one of the **drivers of inhibition of photosystem efficiency in marine microalgae**<sup>8</sup>. In addition, a REACH Substance Evaluation report has pointed out that **four metabolites of Diuron are considered as possibly relevant in terms of endocrine disruption properties**<sup>9</sup>.

### Overall assessment

When assessing current levels in the Baltic Sea, current inputs, and the severity of the relevant toxicity mechanism, Diuron scores **60-68/100** 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** The substance is manufactured/imported in the EU in quantities 100 - 1,000 t/y according to EU REACH registrations<sup>10</sup>. The **REACH registered uses** indicate applications in polymers and rubber products, with releases expected from industrial use, as well as from outdoors use of long-life materials such as tyres, construction, and building materials due to weathering<sup>9,10</sup>. At least in the past it is reported to have been widely used as a tin-free, copper-free booster biocide for antifouling paints, as well as in aquaculture, and a relevant substance for Off-shore Wind Farms (OWFs)<sup>11</sup>. In the EU it is not an approved active substance for use in antifouling. However, releases from surfaces where it has been previously applied or applied outside the EU are possible. There is also a possible future use as biocide (preservative for films and construction materials), as an initial application for approval is in progress by Denmark under the EU Biocidal Products Regulation (there is an ongoing assessment by Denmark whether diuron is an endocrine disruptor)<sup>12</sup>.

**P** Based on available estimations<sup>5,6</sup>, effluents of Wastewater Treatment Plants appear the main (quantified) source of inputs, with approximate estimations indicating orders of magnitude such as 70-80 kg/y of riverine and 20-70 kg/y of direct inputs. As mentioned above, emissions due to off-shore activities may add to this.

### Relevant policies (existing or planned measures)

**M (on A/P)** • Listed as a priority substance under the **EU WFD** (and its update proposal) – including respective national **Programmes of Measures for this**. The EQSD update proposal also includes an EQS for total of active substances in pesticides, including their relevant metabolites, degradation and reaction products.

• REACH: Substance Evaluation was concluded by Finland in 2024<sup>11</sup>. For addressing risks from wide-dispersive uses, the respective report proposed identification as SVHC, which though it will be possible only after endocrine disrupting / PBT / or PMT properties are confirmed. The report also proposes to consider the possibility for restriction.

• Further measures are relevant, such as the updated EU Urban Waste Water Treatment Directive (no specific listing of the substance as such).

### References:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

[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 the 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 somewhat lower, but in any case >50%.