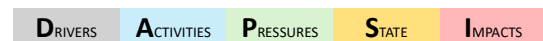


Cobalt and its compounds

(CAS numbers: e.g. 7440-48-4, EC numbers: e.g. 231-158-0
/ Entry number in HELCOM list of priority substances: 10)

General sectors: Industry and commercial products, food and feeding, off-shore (aquaculture)?



Why a HELCOM concern?

Main evidence

P The amount of Cobalt estimated to enter the Baltic Sea every year via rivers is approximately **96 tonnes** (WATERBASE¹). Additional inputs may be expected from direct emissions from land-based sources and potentially atmospheric deposition. Given that Cobalt is **very persistent (metals do not degrade) and toxic**², current inputs are considered as likely significant, in terms of risk they pose for the Baltic Sea and its ecosystem services. As mentioned below, levels in Baltic Sea have already occasionally exceeded thresholds. The riverine data used for the estimation concerns only measurements in the proximity of river mouths, and the period 2015-2022. The 65 subcatchment areas for which there was such riverine data reflected 48 % of the total riverine flow to the Baltic Sea, to which inputs have been extrapolated. The data in WATERBASE included approximately 5 countries and 5033 samples. Likely increased inputs in the near future are possible, due to Cobalt's use in emerging sectors, such as in batteries.

S Concentrations of Cobalt exceed the applied threshold value in **1** of the 12 examined areas (assessment units) of the Baltic Sea. The threshold is exceeded in coastal areas (**0/4** assessed off-shore areas). In this 1 area, **67%** of the assessable samples in **water** exceed the threshold value. This is based on monitoring data for the period 2015-2024 available in national and international databases³. A total number of 476 data points were possible to evaluate for Cobalt.

By further considering how much above or below the threshold each concentration is, and how often the substance is detected, Cobalt scores **2.3/10** (confidence range: **2.3 – 5.7**) 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 Cobalt in water was acquired from the NORMAN Network ecotoxicology database⁴. Cobalt has also a CLP harmonized classification as Aquatic Chronic 4.

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

Further evidence

I Cobalt is considered to have an especially **concerning mode of toxicity**, as 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, Cobalt scores **29-47/100** 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 According to REACH registration data, Cobalt and its compounds are manufactured/imported in the EU in quantities : 1,000 - 10,000 tonnes/year⁶. According to the literature, sectors of use include metal surface treatment products, batteries, semiconductors, electronic equipment, optical equipment, and as micronutrient. Cobalt is also used in feeds in agriculture and likely also in aquaculture. An overview of REACH-registered uses with potential emissions has not been compiled here.

S ? *In order to further improve the evaluation of risk, one aspect that could be investigated in the future is a review of the water toxicity threshold (including whether background levels taken into account; furthermore, it is relevant to assess compatibility in terms of form (soluble/total – specifically for water) between measured levels and the threshold).*

Relevant policies (existing or planned measures)

M (on A/P) • **Five cobalt salts are listed as SVHC** (Substances of Very High Concern) **under EU REACH** (due to their toxicity for reproduction and carcinogenicity properties). ECHA has developed an **Risk Management Options Analysis for the group of soluble cobalt salts**. Furthermore, Member States of the EU have developed **Risk Management Options Analyses for certain individual cobalt substances**. Substances containing Cobalt are also included among the substances covered by a recent **Assessment of Regulatory Needs prepared by ECHA on groups such as Complex inorganics from non-metallurgy**⁷.

• There are provisions in **EU Best Available Techniques** Reference Documents for cobalt.

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]