

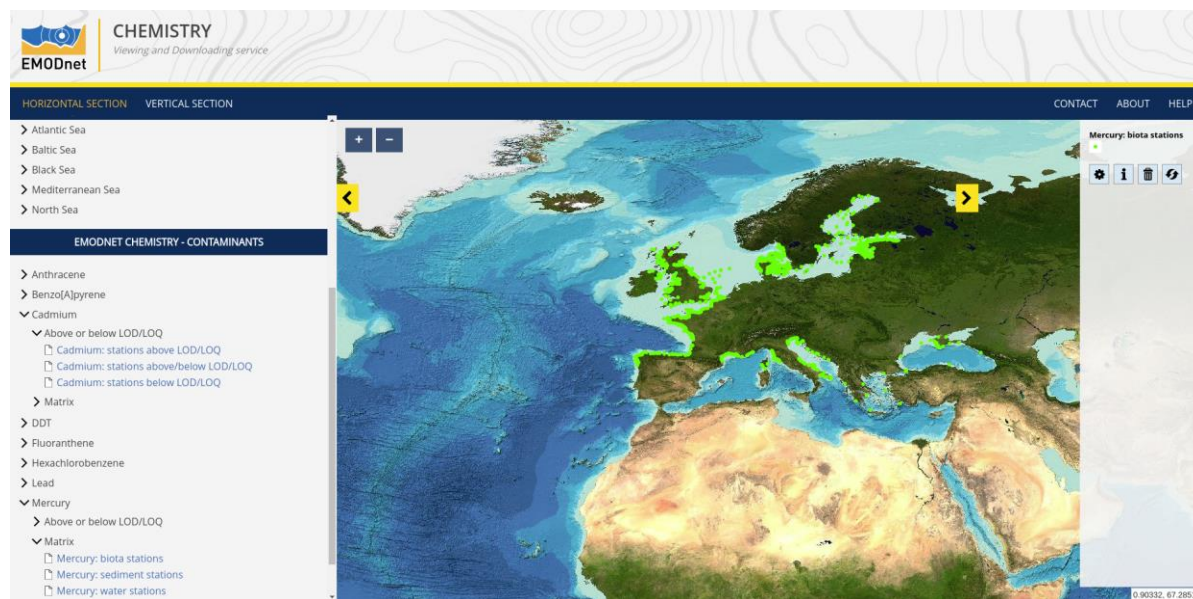
Press release

**New maps show the widespread, yet largely invisible, problem of contaminants in European seas**

***European marine data integrator EMODnet launches new digital maps of contaminants, providing a comprehensive information tool for marine policy and wider society.***

Our oceans are under constant stress from a wide variety of contaminants that are mostly introduced by human activities such as land-based industrial activity, pollution by ships, atmospheric deposition, oil, gas and mineral exploration and exploitation and riverine inputs. These include highly toxic and persistent compounds e.g. Hexachlorobenzene (HCB) that may be produced and released unintentionally through various man-made chemicals. Contaminants also include heavy metals (e.g. Mercury, Cadmium and Lead) which are transferred to the seas and oceans via the air or via water e.g. rivers. These contaminants are invisible and yet harmful to marine ecosystems. These are toxic, typically accumulating in sediments and in marine organisms. Such compounds also amplify up the food chain to larger fish, shellfish and, ultimately, human consumers where they can create a wide range of health problems for humans and marine organisms. Contaminants are also persistent, remaining toxic for decades, taking a long time to degrade through natural processes.

The European Marine Observation and Data Network (EMODnet) Chemistry portal has launched a collection of maps dedicated to contaminants. These maps visualise data from more than 100 data providers, following intense work by EMODnet Chemistry of data aggregation, harmonization, analysis and validation.



**Figure 1: Mercury in biota (mollusc, fish and crustacean). Data span from 1979 to 2017**

The available maps display information on the spatial distribution of the stations based on data from 1970 to 2017. They focus on the following contaminants: Anthracene, Benzo(a)pyrene, Cadmium,

Dichlorodiphenyltrichloroethane (DDT), Fluoranthene, Hexachlorobenzene (HCB), Lead, Mercury, Naphthalene and Tributyltin (TBT), considering datasets with the following characteristics:

- Contaminants in the dissolved phase for water
- Data on total sediment (regardless of size class) or size class < 2000 µm for sediment
- Contaminants on molluscs, on fish (only in the muscle), and on crustaceans (Figure 1)

These contaminants maps are a useful tool in environmental status and impact assessment analysis, requested by many EU directives and Regional Sea Conventions agreements. This product is envisioned to illustrate the distribution and composition of contaminants and its impacts on aquatic life, forming the basis for policymakers and the general public to find, understand, and interpret data about the pollution crisis affecting us all. The whole set of products allow to display spatial data distribution and to evaluate data quality and fitness for use for MSFD environmental quality assessment purposes.

Giordano Giorgi (ISPRA, partner of EMODnet Chemistry), lead developer of the products, stated: *“Such maps, produced at European level with harmonized and validated data, give an overview picture of the monitoring effort developed for the assessment of contaminant pollution according to EU Directives and Regional Sea Convention agreements. Tackling with issues like comparability versus specificities of the different marine basins is of the utmost importance to provide a common framework for the planning of measures and contaminant maps produced by EMODnet Chemistry represent a useful tool for such purposes.”*

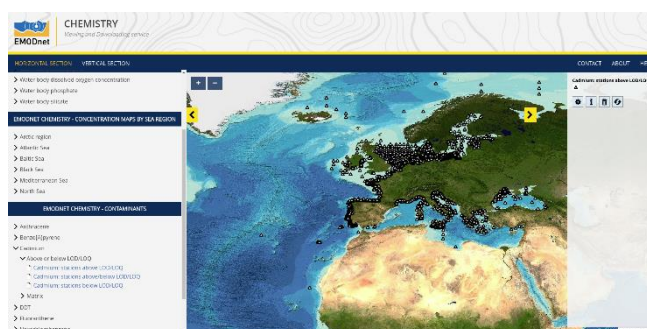
### Background information

EMODnet Chemistry has included the gathering of contaminants data since the beginning of the project in 2009. Now, more than 100.000 datasets related to contaminant substances can be found through the data access portal (<https://emodnet-chemistry.maris.nl/search>). The series of relevant map products have been developed according to the primary criteria D8C1 of the Marine Strategy Framework Directive (MSFD) Directive on the concentration of contaminants not exceeding agreed threshold values, in compliance with the new Commission Decision 2017/848 (17th May 2017). In particular, the new Commission Decision addresses relevant threshold values that are already specified by the Water Framework Directive (WFD) for coastal and territorial waters or established by Member States through regional or sub-regional cooperation beyond territorial waters. In this context, for priority substances threshold values including units, matrices and species groups for biota are established by the Environmental Quality Standards<sup>1</sup> Directive which does not fix any threshold values in sediments. On the contrary, in such cases Regional Sea Conventions have provided some threshold values that have also been taken into account for the development of the products. Using this legislative background, the list of substances was cross-referenced with the available data in EMODnet Chemistry, and with the relevant matrix.

<sup>1</sup> [https://ec.europa.eu/environment/water/water-dangersub/pri\\_substances.htm](https://ec.europa.eu/environment/water/water-dangersub/pri_substances.htm)

This work has been followed-up by the EMODnet Chemistry board of experts that play a very relevant role in EMODnet Chemistry, providing their feedback on the products through a series of questionnaires and workshops. Now the task has been completed with the publication of the maps through OGC compliant services.

In order to provide the information on “fitness for use for environmental quality assessment”, products display data below and above Limit of Quantification (LOQ; Figure 2) and or Limit of Detection (LOD), data with LOQ/LOD above or below 30 percent of EQSD threshold values, as well as information on the sampled matrix and species groups.



**Figure 2: Cadmium: stations with data values above Limit of Quantification (LOQ) (data available in the matrices of water, sediment and biota)**

The products can be freely accessed through OceanBrowser in the Chemistry portal (<http://ec.oceanbrowser.net/emodnet/>) and the specific web services (WMS, WFS) can be accessed through the Sextant catalogue (<https://www.emodnet-chemistry.eu/products/catalogue>).

**To access the contaminants maps, visit the EMODnet Chemistry Portal:**

**[www.emodnet-chemistry.eu](http://www.emodnet-chemistry.eu)**

**Source and information:**

Kate Larkin

Deputy Head EMODnet Secretariat

European Marine Observation and Data Network (EMODnet Secretariat)

Phone: +32 (0) 59 34 14 27

Email: [kate.larkin@emodnet.eu](mailto:kate.larkin@emodnet.eu)

Giordano Giorgi

Lead developer of Contaminant related products from EMODnet Chemistry

ISPRA, partner of EMODnet Chemistry

email: [giordano.giorgi@isprambiente.it](mailto:giordano.giorgi@isprambiente.it)

Maria Eugenia Molina Jack

OGS, lead partner of EMODnet Chemistry

email: [mmolinajack@inogs.it](mailto:mmolinajack@inogs.it)

*EMODnet is a gateway to marine data in Europe with free, open access to data, data products and metadata from more than 150 organisations. Explore data and maps of bathymetry, geology, physics, chemistry, biology, seabed habitats and human activities [www.emodnet.eu](http://www.emodnet.eu)*