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Data Network

*Your gateway to marine data in Europe*

## Dedicated maps on contaminants

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The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.



## General context

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- ① **Produce specific maps on contaminants** that could be a useful tool in environmental impact assessment analysis requested by many EU directives and Regional Sea Conventions agreements.
- ② As a matter of fact **there is a large heterogeneity of data from monitoring on contaminants**. As a very first step, **find a set of contaminants, units and matrix that are common for all basins**, with the objective of developing products that are comparable at European scale
- ③ For **such selection of specific contaminants** and associated matrix, available **data will be quality controlled and validated**, and **maps will be produced from the validated data**



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# New MSFD GES Decision on Contaminants

Criteria elements	Criteria	Methodological standards
Contaminants in a matrix with EQS	Concentrations do not exceed EQS Threshold Values	a) For each contaminant whether the threshold values set have been achieved b) The proportion of contaminants assessed which have achieved the threshold values, indicate substances behaving like ubiquitous persistent, bioaccumulative and toxic substances (uPBTs)
Contaminants in a matrix with no EQS	Concentrations do not exceed Threshold Values established by Member States through regional or sub-regional cooperation. <i>For RBSPs regional cooperation is already in place by WFD WG except for Med Sea</i>	
River Basin Specific Pollutants (RBSPs)		
Additional contaminants which may give rise to pollution effects in the region or subregion		

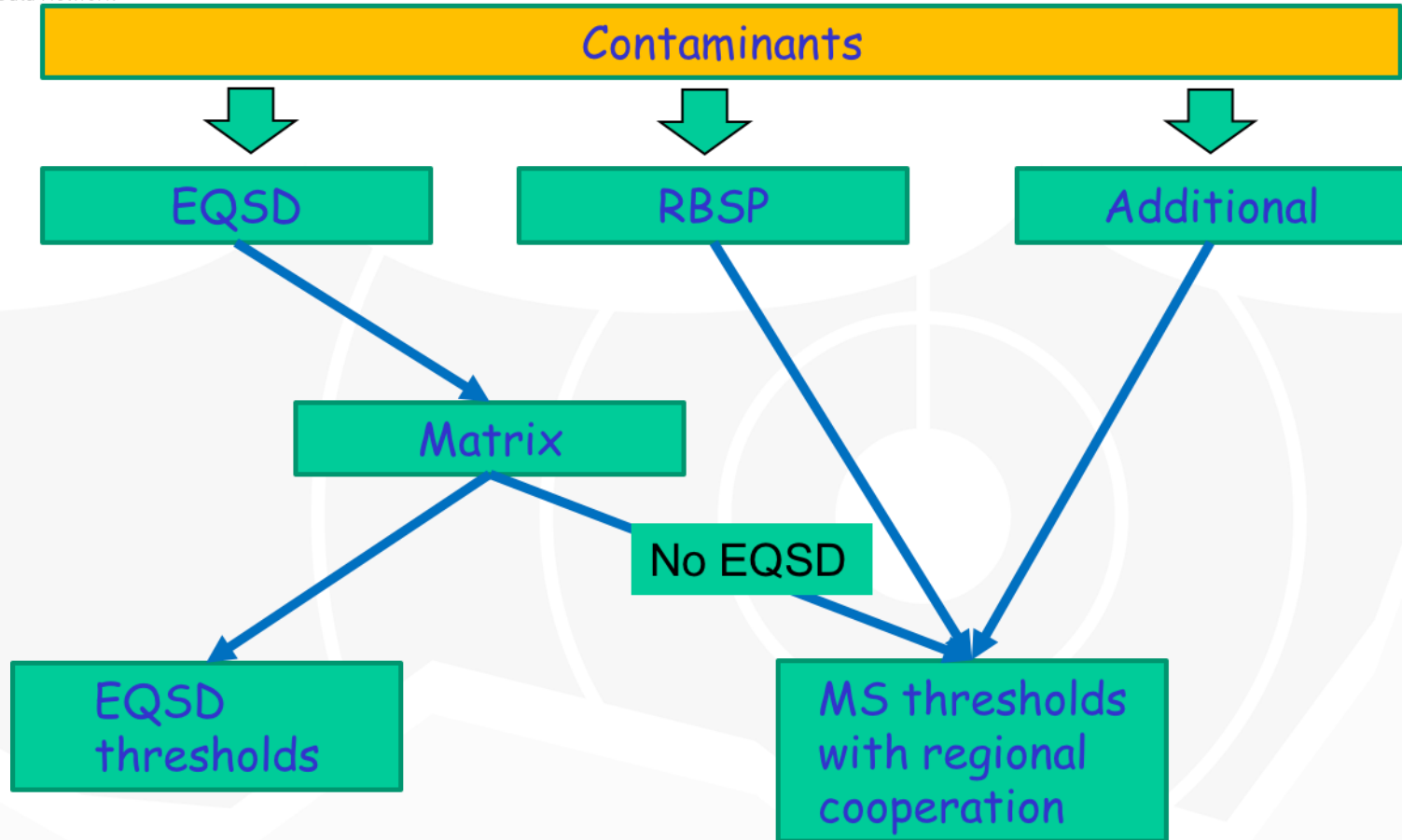


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# New MSFD GES Decision on Contaminants





# List of Contaminants

Matrix	Contaminants	Units of measure	Further details
Water	Pesticides and biocides: DDT, HCB Antifoulants: TBT, TPT Heavy metals: mercury, cadmium, lead Hydrocarbons (PAH): Anthracene, Fluoroanthene, Benzo(a)pyrene	µg/l	Dissolved phase
Sediments	Pesticides and biocides: DDT Antifoulants: TBT Heavy metals: mercury, cadmium, lead Hydrocarbons (PAH): Anthracene, Naphtalene, Hexachlorobenzene	µg/kg of dry weight	total sediment (regardless of size class) or size class < 2000 µm
Biota	Pesticides and biocides: total DDT Heavy metals: mercury and its compounds, <u>lead and cadmium</u> Hydrocarbons (PAH): Fluoroanthene, Benzo(a)pyrene, Hexachlorobenzene	µg/kg of fresh weight ( <b>BUT: mussel in dry weight</b> )	Focus on molluscs, fish (only in the muscle), and on crustaceans



## Type of maps

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Temporal ranges:

Before 2012

From 2012 to today

For 6-year windows

- In order to provide information on “fitness for use for environmental quality assessment”, products will display data:
- Below and above Limit of Quantification (LOQ)
  - With LOQ above or below 30 percent of EQSD threshold values
  - Below and above EQSD threshold values
  - Will provide information on the biota and sediment types



# Type of maps

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- ⦿ Maps showing values: above or below LOQ. Example:
  - ⦿ Green points: below LOQ - change to symbols
  - ⦿ Orange points: above LOQ - change to symbols
- ⦿ Maps showing data with LOQ above or below EQSD threshold values:
  - ⦿ Green points: LOQ below 30% of EQSD threshold values - change to symbols
  - ⦿ Red points: LOQ above 30% of EQSD threshold values - change to symbols
- ⦿ Maps showing matrix monitored:
  - ⦿ Blue points: water
  - ⦿ Brown points: sediments
  - ⦿ Green points: biota
- ⦿ Maps showing species group monitored (at least for DDT, Fluoranthene, HCB, Mercury and Benzo(a)pyrene) according to EQSD thresholds for biota:
  - ⦿ Green point: Molluscs
  - ⦿ Orange point: Crustaceans
  - ⦿ Blue point: Fish
  - ⦿ Grey point: Others



## Type of maps

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- ① Maps showing the range of concentrations, **excluding from the analysis data equal or below LOQ when LOQ is not below 30 % of EQSD threshold values or equal to 0:**
  - ① concentrations corresponding to: 0-20 percentile, blue colour
  - ① concentrations corresponding to: >20-40 percentile, green colour
  - ① concentrations corresponding to: >40-60 percentile, yellow colour
  - ① concentrations corresponding to: >60-80 percentile, orange colour
  - ① concentrations corresponding to: >80-100 percentile, red colour
- ① Possible additional maps proposed:
  - ① *For sediments: Maps showing availability of a normalizer (TOC or Loss on ignition for organic substances, Li, Al or clay-silt fraction for metals):*
    - ① *blue points: normalizer available*
    - ① *orange points: No normalizer available*
- ① Maps showing concentration values above or below EQS threshold values:
  - ① *Green points: concentration values below EQS threshold values*
  - ① *Red points: concentration values above EQS threshold value*





# Contaminants maps for Biota (1)

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Threshold values in Part A of Annex I to Directive 2008/105/EC

Priority Substance	Threshold values ( $\mu\text{g}/\text{kg}$ wet weight)	LOQ<0.3 * Threshold	Species	Note
Brominated diphenylethers CAS: 32534-81-9	0.0085	0,0025	Fish	sum of the concentrations of congener numbers 28, 47, 99, 100, 153 and 154
Fluoranthene CAS: 206-44-0	30	9	Crustaceans and molluscs	In EMODNet Chemistry 3 proposal
Hexachlorobenzene CAS: 118-74-1	10	3	Fish	In EMODNet Chemistry 3 proposal
Hexachlorobutadiene CAS: 87-68-3	55	16.5	Fish	
Mercury and its compounds CAS: 7439-97-6	20	6	Fish	In EMODNet Chemistry 3 proposal
Benzo(a)pyrene CAS: 50-32-8	5	1.5	Crustaceans and molluscs	In EMODNet Chemistry 3 proposal
Dicofol CAS: 115-32-2	33	9.9	Fish	



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## Contaminants maps for Biota (2)

 Threshold values in Part A of Annex I to Directive 2008/105/EC

Priority Substance	Threshold values ( $\mu\text{g}/\text{kg}$ wet weight)	LOQ<0.3 * Threshold	Species
Perfluorooctane sulfonic acid and its derivatives (PFOS) CAS: 1763-23-1	9.1	2.73	Fish
Dioxins and dioxin-like compounds	Sum of PCDD+PCDF+PCB- DL 0.0065 $\mu\text{g}/\text{kg}$ TEQ		Fish, crustaceans and molluscs
Heptachlor and heptachlor epoxide CAS: 76-44-8/ 1024-57-3	0.0067	0.002	Fish



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## Threshold values in sediments

EU EQS Directive does not fix any threshold values in sediments. On the contrary Regional Sea Conventions provide some of them. For example, Barcelona Convention has fixed the following ones:

Name of substance	Matrix	Units	type	Threshold values	Sample
Anthracene	Sediment	µg/kg dw	BAC	1.8	Sieved sample. No TOC norm
Anthracene	Sediment	µg/kg dw	ERL	85	Sieved sample. 2.5 % TOC norm
Cadmium and its compounds	Sediment	µg/kg dw	BAC	127.5	Sieved sample. No TOC norm
Cadmium and its compounds	Sediment	µg/kg dw	ERL	1200	Sieved sample. 2.5 % TOC norm
Lead and its compounds	Sediment	µg/kg dw	BAC	25425	Sieved sample. No TOC norm
Lead and its compounds	Sediment	µg/kg dw	ERL	46700	Sieved sample. 2.5 % TOC norm



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## Contaminants maps timeline

- ① To achieve harmonized products for all European seas, based on common parameters, **for a list of specific contaminants**, measurement units and associated matrix, **it is proposed to provide detailed information** to the wide EMODnet Chemistry partnership for the **data collection scheduled for ~~M15 = May 2018~~**
- ② Finally, data need to be regionally harvested, quality controlled and validated, and maps will be produced from the validated data. **Deadline for updated data collections and dedicated maps on contaminants is M20 = October 2018.**



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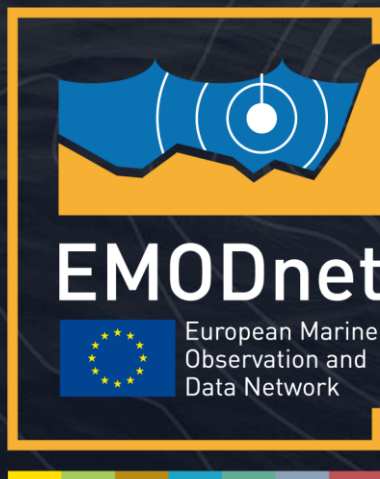


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## Main issues

### Workflow:

- Harvesting -> RLs validation -> Static contaminant maps
- How RL will format data sets? ODVs or other formats
- Need to decompose information on P01 to extract, matrix, substance, species, ...etc...In Italian data sets for one substance there are 1-2 P01 different codes but this is not the case in general
- How to deal with LOQ/LOD as flags. 0 or null values are excluded from the analysis wrt EQS Threshold Values.
- Points are based on single measurements in the time period selected
- Maps will be produced in shapefile format but also as printable formats



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