

**Preparatory Actions for European Marine Observation and Data
Network**

**FIRST PROGRESS REPORT
FOR THE PERIOD
JUNE-JULY 2009**

Service Contract No. “MARE/2008/03 - Lot 3 Chemistry – SI2.531432”

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1. INTRODUCTION

This report gives an overview of the activities undertaken during the first two months of the project (4th of June – 3rd of August).

This period was mainly devoted to the project start-up. Two meetings were held, the first EMODNET General Assembly, organised by EU in Brussels, and the Chemical lot kick-off meeting, organised in Trieste the 2nd and 3rd of July. The last one was attended by the Coordination Group; the report of the meeting and the Action list produced is given below.

According to the project planning of activities, the WP2 and WP3 tasks are supposed to start during the first two months of the project. As a result, the proposal for Metadata and Data Collection Methodology for EMODNET Chemical lot was prepared by the WP2 leader (NERI-MAR) and was reviewed by the partners. It gives the general description on the activities to undertake for executing WP2 tasks and the related deadlines.

In addition, the proposal for Parameter Selection for EMODNET Chemical Lot was prepared by WP3 leader (ICES). It includes the table describing the most relevant parameters in relation to the selection criteria.

Finally, the Excel file with the Data Inventory was revised and updated by the partners. Two new columns were added, to fill in with the Regional Convention (OSPAR / HELCOM / Barcelona / Black Sea) and/or EEA, if data are reported.

All updating related to the Chemical lot activities and all documents produced are available on the web site <http://nodc.ogs.trieste.it/nodc/projects/emodnet>.

2. EMODNET CHEMICAL LOT KICK-OFF MEETING

EMODNET kick-off meeting was held in Trieste, the 2nd and 3rd of July. Participants were the Coordination Group members, the representative of the Black Sea Commission and RNODC.

The first day was dedicated to recall the project objectives and the workplan with the timescales.

The discussion was open while presenting the methods for data and meta data collection, focusing on the strategies to get as much as possible data available in the system. It was decided to write a roadmap of how to get data, starting with the review the data inventory.

Then while discussing QC/QA methods and products, it rose the need for the definition of a set of parameters to focus in. A table of priorities parameters has been prepared and reviewed by the partners. This parameter set has to be approved by EU. With the purpose of products generation, it was decided to set up three regional data pools (for internal use), at ICES for Greater North Sea, HCMR for the Mediterranean spots and MHI for the Black Sea respectively. ICES will draft structure following their experience in OSPAR, HELCOM, EEA.

For the technical development, the SeaDataNet infrastructure will be adopted. All EMODNET data and metadata will be made available from SeaDataNet portal, eventually adapted to the project needs. For this purpose, the Coordination group will take part to the next SeaDataNet Technical Task Team meeting. For internal use, the extranet web portal (with password) will be hosted by OGS and will include presentations and contract papers as well as project reports.

The analysis and evaluation objectives were recalled, underlying that the activities will take place on the third year. A questionnaire to gather information for relevant for WP5 will be draft by the WP leader (NERC-BDOC).

Finally, the conclusions from Brussels meeting, with input from other lots and the connection with Marine Conventions and EEA were reported.

The second day was dedicated to review the project management, the Consortium Agreement, the partner payments, and to finalize the action plan.

3. PROJECT DOCUMENTS

In the following the documents produced during this phase of the project are attached.

As a result from EU reading of the report, we ask to confirm that the chosen parameters are relevant, abundant and there are not any better alternates (bearing in mind that we need to strike a geographical balance between the different sea regions). We will use the selected parameters to focus the project analyses and evaluation as well as in the data product generation.

ACTION LIST**EMODNET Lot 3 Chemistry – meeting of coordination group**

SUBJECT: List of decisions and actions from meeting of Coordination Group
PLACE: OGS, Borgo Grotta Gigante, Trieste – Italy
DATE: 2nd–3rd July 2009
PARTICIPANTS: OGS, NERI-MAR, HNODC-HCMR, ICES, MARIS, BODC and RNODC, OC-UCy

Primary goal of this meeting has been to get agreement on the project start up, on data collection methodology, partner involvement and link with SeaDataNet TTT for the implementation of the SeaDataNet V1 system.

Action: define method to get data in the system (NERI-MAR write description of methodology), (asap, first draft for coordination group after 1 week, 1 week for feedback and then distribution among partners)

Action: make a table with two parameters to focus in per group from the analyses of parameters listed in EMMA process, adopted and/or compared, timing as first point (ICES will draft to CG in 1 week and then 2-3 weeks for distribution to all partners and then feedback/confirmation from EC in August report)

Action: we will set up 3 regional data pools for the products generation (for internal use) at ICES for Greater North Sea, HCMR for the Mediterranean and MHI for the Black Sea. ICES will draft structure following their experience in OSPAR, HELCOM, EEA.

Action: draft a questionnaire for the next meeting to gather information for WP5 (NERC-BDOC).

Action: set up OGS project extranet (1 pwd. for all partners) with presentations and contract papers and mailing list (asap, within 1 week)

Action: intention letter of support from DG-MARE and DG-ENV and EEA; confirmation of cooperation with Marine Conventions (draft by MARIS within 2 weeks and sent by OGS)

Action: include in the agenda of the TTT in 2-4 September 2009 the technical set up (with ICES, NERI-MAR – responsible MARIS)

Action: set up draft site map of EMODNET web portal to discuss at the TTT (link with SeaDataNet) – responsible OGS and MARIS

Action: OGS ask permission from EC that we can publish about project without written consent from EC

Action: OGS will finalize the Consortium Agreement. OGS will check the opportunity to circulate an e-mail to all partners explaining that in the invoice it should be clearly noted that EC funds should be exempt from VAT. Each partner should adapt the above text according to their local regulations

Action: next meetings (2-4 September and 22-27 November 2009 for CG, March 2010 (week 13) for full group in combination with SeaDataNet). The CG will represent the consortium at the EU assembly

PROPOSAL FOR METADATA AND DATA COLLECTION METHODOLOGY FOR EMODNET CHEMICAL LOT

Task Leader: NERI-MAR

1. Introduction

This note describes the proposed metadata and data collection methodology for the EMODNET Chemical lot contract. This document has been composed by the EMODNET Coordination Group (CG). It gives partners, that are involved in the WP2 activities, instructions on the steps and activities to undertake for executing WP2 of the project plan.

This note contains:

1. Introduction
2. Methodology description – metadata and data collection
3. Summary of tasks of WP2 partners

For overall questions partners can contact the coordinator Alessandra Giorgetti (OGS) or the technical coordinator Dick M.A. Schaap (MARIS). For specific WP2 questions partners are advised to contact the responsible WP2 taskleaders for the different geographic areas:

- **Greater North Sea** => NERI-MAR (National Environmental Research Institute, Department of Marine Ecology: Anders Windelin, awi@dmu.dk, +45 4630 1250 (NERI-MAR is the overall leader of WP2)
- **Black Sea** => MHI (Marine Hydrophysical Institute, Department of Marine Environmental & Information Technologies): khaliulin@mhi-mist.sevsky.net, +380 692 545604
- **Mediterranean spots** => HNODC-HCMR (Hellenic Oceanographic Data Centre-Hellenic Centre for Marine Research): sissy@hnodc.hcmr.gr, +30 22910 76367

Moreover partners are advised to read the TECHNICAL TENDER FORM, LOT No.3 – CHEMICAL DATA (Annex 2 to the CALL FOR TENDERS N° “MARE/2008/03 - Preparatory Actions for European Marine Observation and Data Network”) as background information, because it contains the underlying projectplan.

2. Methodology description – metadata and data collection

List of selected parameters

The EU Call for Tender asks the contract partners to collect metadata and data for the following groups of chemicals, which also happen to be required for monitoring the Marine Strategy Directive. As stated in the MSFD, the 8 parameter groups required are:

Chemical group	Category	Full text from MSFD Annex III
1. Pesticides (Synthetic compounds)	Contamination by hazardous substances	- Introduction of synthetic compounds (e.g. priority substances under Directive 2000/60/EC which are relevant for the marine environment such as pesticides, antifoulants, pharmaceuticals, resulting e.g. from losses from diffuse sources, pollution by ships, atmospheric deposition and biologically active substances); – Introduction of non-synthetic substances and compounds (e.g. heavy metals, hydrocarbons, resulting e.g. from pollution by ships and oil, gas and mineral exploration and exploitation, atmospheric deposition, riverine inputs); – Introduction of radio nuclides.
2. Antifoulants (Synthetic compounds)		
3. Pharmaceuticals (Synthetic compounds)		
4. Heavy metals		
5. Hydrocarbons (including oil pollution)		
6. Radionuclides		

7. Fertilizers and other nitrogen	Nutrient and organic matter enrichment	<ul style="list-style-type: none"> – Inputs of fertilizers and other nitrogen - and phosphorus-rich substances (e.g. from point and diffuse sources, including agriculture, aquaculture, atmospheric deposition); – Inputs of organic matter (e.g. sewers, mariculture, riverine inputs).
8. Organic matter		

For the contract at least one chemical should be defined for each of these 8 groups to make a minimum of 12 chemicals in all. The same chemicals should be used for all the 3 maritime basins. They should be chosen on a basis of their threat to the environment.

To make a choice of parameters, the Coordination Group (CG) decided to analyse and adopt the outcome of the EMMA-project (“European Marine Monitoring and Assessment” - indicators concerning the Marine Strategy Directive). This analysis is given in a separate document, that has been prepared by WP3 leader ICES (Neil Holdsworth). Based upon the availability and priorities analyses performed by the EMMA work, a table has been composed with 2 parameters per parameter group. This list of 16 parameters in total is agreed by the CG as the basis for the EMODNET Chemical Lot contract. See **“WP3_TaskEMNC3.1_ParameterSelection.doc”**.

So WP2 partners are asked to identify and collect data sets for these 16 parameters for the given geographic regions.

Data availability

The 16 parameters can be part of monitoring programmes and of research activities. In case of national monitoring programmes already a selection of the stations are being reported by the member states as part of the regional conventions: OSPAR for the North Atlantic and North Sea, HELCOM for the Baltic Sea, Barcelona Convention for the Mediterranean Sea and the Black Sea Convention for the Black Sea. For OSPAR and HELCOM the reported data sets are stored and managed at ICES, who is member of the EMODNET Chemical Lot consortium. For the Black Sea Convention the reported data sets are stored and managed at the Black Sea Secretariate. Moreover selected monitoring stations are reported to the EEA as part of the Water Framework Directive, which are stored and managed at ICES. The regional conventions have already indicated at the EMODNET kick-off meeting, that they are willing to cooperate and give support to the EMODNET Chemical Lot, while the EEA is one of the members of the EU EMODNET Task Force. To establish cooperation and to get agreement, that the EMODNET Chemical Lot consortium can use the reported data sets, it is agreed, that MARIS will prepare a letter to the regional conventions. Furthermore a letter of support will be requested from the EMODNET Task Force, consisting of a.o. DG-MARE, DG-ENV and EEA, that can be used by the EMODNET Chemical Lot for getting support from other sources of data sets.

In most countries the internationally reported stations are only a selection of the total number of monitoring stations. So on a national scale there might be much more monitoring stations and related data sets for the 16 parameters. Furthermore there are research activities, that might have collected the selected parameters. It is the task of the EMODNET Chemical Lot partnership to identify and to bring together all these available data sets from all possible dataholders.

In some countries it might be that the institute, to which the EMODNET Chemical Lot partner belongs, is responsible for the national monitoring and in that case the EMODNET Chemical Lot partner might already oversee and manage a major part of the existing data sets. But in many cases also other institutes in their country will be engaged in the monitoring and research activities, covering any of the 16 selected parameters.

Therefore it is a first priority for the partners to identify relevant data holders in their country and to approach these for getting their cooperation and an up-to-date inventory. Then it is an important challenge for the partnership to bring together all relevant data sets, because only then SeaDataNet can proof its added value, both for the conventions and for the EEA.

1st Step - Updating the data inventory

As part of the tender proposal an inventory was prepared by partners of possible data holdings. This inventory is included in the Contract documents and can be found at the Extranet (<http://nodc.ogs.trieste.it/nodc/projects/emodnet>). Because of the refined choice for the 16 parameters it is required that partners immediately undertake action for revising and updating the data inventory for their part. The deadline for this action is set by the CG at 4th August 2009. Partners must report their updated inventory to the project coordinator Alessandra Giorgetti (OGS).

When updating the data inventory, the partners are requested to indicate in a separate column whether the data sets are part of the reporting for the Regional Conventions (OSPAR / HELCOM / Barcelona / Black Sea) and/or to EEA.

The updated inventory will be included in the first progress report, that will be posted on the website around the 4th of August 2009. That way the CG seeks feedback and confirmation from the European Commission (EC) for the selected 16 parameters and consecutive actions.

2nd Step - Data collection and regional pooling

To optimise our efforts the existing SeaDataNet (SDN) infrastructure will be used for the EMODNET project. The EMODNET Chemical portal will use SeaDataNet Version 1 infrastructure and use SDN Standards for data and metadata (Metadata directories and Vocabularies).

After confirmation of the 16 parameters choice by the EC, the partners must start with collecting the data sets from the identified dataholders and with preparing the metadata for these data sets following the SeaDataNet Common Data Index (CDI) and using the MIKADO software tool and the SeaDataNet Common Vocabularies. Furthermore the data formats have to be converted to SeaDataNet ODV format, e.g. using the NEMO software tool. More details about Metadata formats and Data Transport Formats can be seen on SDN website under standards and software: http://www.seadatanet.org/standards_software

For gathering copies of data sets and relevant metadata from external dataholders, it is important to explain to these dataholders how their data sets will be used and presented in the EMODNET Chemical portal. The data sets will be considered as “background info” for the EMODNET Chemical Lot contract. This means that the gathered data sets will be used internally by the partnership to generate (foreground) data products, which are maps with the selected chemicals (including confidence indications) for the following geographical regions:

- The Greater North Sea
- The Black Sea
- The Mediterranean spots

These data products will be made available to users via the Chemical portal for viewing and downloading without any restrictions. But the actual (background) data sets will only be described with metadata as Common Data Index (CDI) records and included in the SeaDataNet CDI service. The CDI Service will then provide users the metadata and possible access to the associated data sets following the SeaDataNet CDI shopping mechanism, thereby respecting data policies and access restrictions, as set by the originators. So data holders can make restrictions on the public access to their data sets and requests for access from users will be forwarded to the data holders. This is visualised in figure 1.

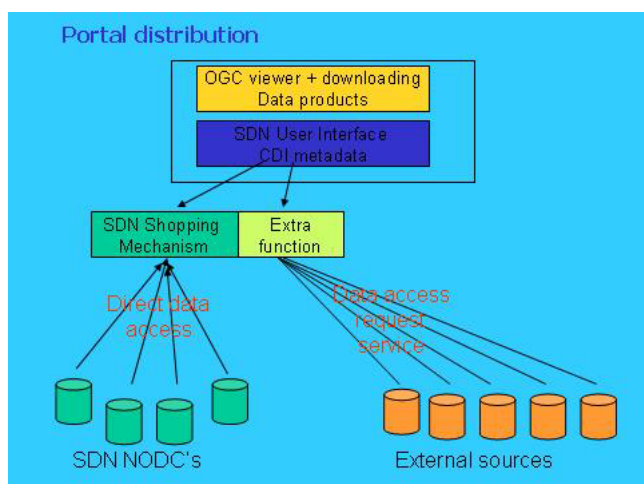


Figure 1: Visualisation of the services to users via the portal

For the analysis and production of the data products (WP3 activities) the CG has agreed to adopt a regional approach. To undertake WP3 in an efficient way, the CG has also decided to establish 3 regional data pools, where all the gathered data sets per region will be compiled in a common structure.

Regional data pools data will be set-up at:

- ICES for Greater North Sea
- MHI for the Black Sea
- HCMR for the Mediterranean

Note: it is stressed that these regional pools are set up for internal efficiency reasons for WP3. External users will not communicate with the regional pools, but with the distributed data sources, using the SeaDataNet CDI Service.

The regional pools are to be set-up as follows:

1. ICES will specify a database structure (The CHEMICAL DATA BUFFER) to accommodate the 16 parameters based on the current systems used for OSPAR/HELCOM, but simplified. The simplified database structure will also include the links to the CDI records, that will contain the metadata of each data set. The ICES database will act as Greater North Sea regional data pool.
2. In addition, a solution will be prepared for easy importing of the SeaDataNet ODV files into this database structure.
3. The database structure will be adopted by HCMR and MHI for the regional data pools for the Mediterranean spots resp. Black Sea.
4. For Greater North Sea data, a part of the data will be already available at ICES through the OSPAR and HELCOM reporting. ICES will arrange, that these data sets are extracted and then also imported into the Greater North Sea regional data pool.

Note: For the Mediterranean Sea 5 spots are foreseen, that are more or less isolated. Therefore the data products for these spots could be generated by the NODCs responsible for the data in the spot.

Using the regional data pools the data sets will go through a more specific Analysis (WP3) => Quality Control and Quality Assurance. Guidelines on methodology and software to be used for WP3 will be sent out later on (September/October 2009). The data products (Maps with the selected chemicals, including confidence indications) will be based on the Quality Control processed data.

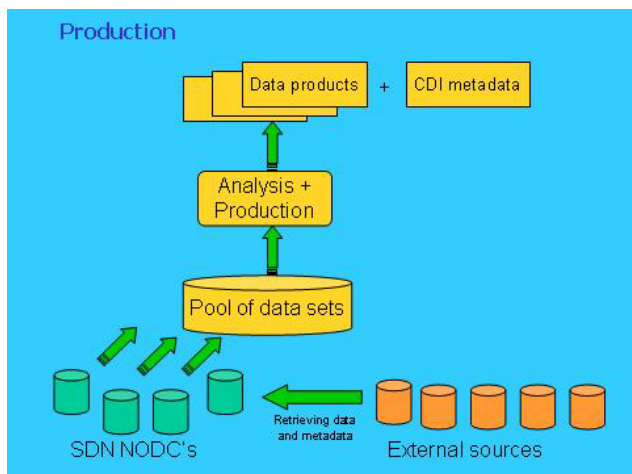


Figure 2: Data gathering, data pooling, data analysis and data production per region (internal process flow)

The first intermediate deadline for gathering and delivering data sets and associated CDI metadata records to the regional data pool coordinators is the **22nd of November 2009**. The final deadline is the **4th of February 2010**.

3. Summary of tasks of WP2 partners

Step 1:

- Updating data inventory (Deadline: 4th of August 2009)
 - o Based on the list with the 2 chemicals per parameter group (see “**WP3_TaskEMNC3.1_ParameterSelection.doc**”) please revise and update the data inventory for your country (worksheet “**DataInventory3_selected_Chemicals.xls**”) and please indicate in which medium (choose between Sediment, Water column, Biota).
 - o Please indicate in the new columns “Conventions’ and ‘EEA’ whether the data sets of the station are already reported to Regional Conventions (fill in: OSPAR / HELCOM / Barcelona / Black Sea) and/or to EEA.

Step 2:

- Data collection and metadata compilation (Intermediate Deadline: 22nd of November 2009, Final Deadline: 4th of February 2010)
 - o Start data collection for the selected chemicals, once OK by EU, and following the updated data inventory. (The Coordinator will distribute the updated data inventory and keep partners informed on the EU feedback).
 - o Convert collected datasets to SeaDataNet ODV format and gather sufficient metadata from dataholders to prepare the associated CDI metadata records
 - o Transfer the collected data sets and associated CDI records to the 3 regional data pools:
 - the Greater North Sea (to ICES)
 - The Black Sea (to MHI)
 - The Mediterranean spots (to HCMR)

PROPOSAL FOR PARAMETER SELECTION FOR EMODNET CHEMICAL LOT

Task Leader: ICES data centre

1. BACKGROUND

As defined in the technical tender form for EMODNET Chemical lot, the selection of parameters to demonstrate the potential of EMODNET as a viable data exchange node is closely linked to the groups of monitoring parameters defined under the Marine Strategy Framework Directive (MSFD, Annex III). The stakeholders in the commission (DG-MARE, DG-ENV and EEA) have an obvious interest in the MSFD and its inherent link to WISE-Marine, and it is clear where this consortium should focus its attention.

The tender states that at least one chemical (parameter) should be defined for each of the parameter groups and that this chemical or proxy indicator parameter for the chemical should be collected in the 3 distinct geographic regions (Greater North Sea, Black Sea and 5 spots in the Mediterranean). Accompanying the parameters should be the information about the matrix sampled in, what monitoring guidelines are followed i.e. Regional sea conventions and the frequency of monitoring/sampling.

The main purpose of collecting the parameters, harmonizing and aggregating them is to create a common dataset with known precision and accuracy where end users can freely access data products and to highlight gaps in the quantity and quality of parameters monitored in the geographic region covered.

2. PARAMETER GROUPS

As stated in the MSFD, the 8 parameter groups required are:

Chemical group	Category	Full text from MSFD Annex III	
9. Pesticides	Contamination by hazardous substances	- Introduction of synthetic compounds (e.g. priority substances under Directive 2000/60/EC which are relevant for the marine environment such as pesticides, antifoulants, pharmaceuticals, resulting e.g. from losses from diffuse sources, pollution by ships, atmospheric deposition and biologically active substances); - Introduction of non-synthetic substances and compounds (e.g. heavy metals, hydrocarbons, resulting e.g. from pollution by ships and oil, gas and mineral exploration and exploitation, atmospheric deposition, riverine inputs); - Introduction of radio nuclides.	Formatted: Bullets and Numbering
10. Antifoulants			Formatted: Bullets and Numbering
11. Pharmaceuticals			Formatted: Bullets and Numbering
12. Heavy metals			Formatted: Bullets and Numbering
13. Hydrocarbons			Formatted: Bullets and Numbering
14. Radionuclides			Formatted: Bullets and Numbering
15. Fertilisers and other nitrogen	Nutrient and organic matter enrichment	- Inputs of fertilisers and other nitrogen - and phosphorus-rich substances (e.g. from point and diffuse sources, including agriculture, aquaculture, atmospheric deposition); - Inputs of organic matter (e.g. sewers, mariculture, riverine inputs).	Formatted: Bullets and Numbering
16. Organic matter			Formatted: Bullets and Numbering

3. SELECTION CRITERIA AND METHOD

Work has already been carried out by the EEA from 2006-2009 on common pan-European indicators in the build up to the MSFD and the implementation of the Water Framework Directive (WFD). This process, known as the European Marine Monitoring and Assessment working group (EMMA), involved all of the regional conventions (OSPAR, HELCOM, Black Sea Commission etc.) and one of the relevant outcomes of this process was a synthesis of all the regional indicators and the parameters monitored into overview

tables¹. This report is a starting point for the selection of parameters for EMODNET chemical lot as it provides an indication of what the end users (in this case the EEA and Commission) are expecting to use the dataset for.

A further consideration for selecting parameters, are the availability of data over geographic areas and over time. This initial selection will be based on the data inventory assembled for the Chemical lot tender and also on additional inventory information (The ICES EcoSystemData holdings, for example).

It was decided by the Coordination group (CG) that EMODNET Chemical lot would aim for 2 parameters for each parameter group (totaling 16 parameters).

Selection is therefore based on the following criteria:

- Ideally, that the parameter is monitored/collected in all 3 geographic regions
- That the time series and sampling frequency is as long as possible
- That the parameter is collected in more than one matrix (sediment, water etc.)
- Ideally, that the parameter is collected under regional monitoring programmes
- Ideally, that the parameter is related to a relevant indicator in the EMMA process
- Ideally, that the parameter is a WFD priority substance

4. SELECTION TABLE

To aid in the decision by the consortium partners of which parameters to select, the WP3 task leader has made an initial table that describes the most relevant parameters in relation to the selection criteria.

¹ ANNEX II to Report 'Towards a 'converging' framework for monitoring and assessment of European marine waters - Synthesis of EEA-led EMMA Workshops

EMN C id	Chemical group	Parameter	Monitoring programme ²				EMMA indicator link ³	WFD Priority ⁴	Data availability (years) ⁵		
			OSP AR	HELCO M	BSIM AP	MedPo l			North Sea	Black Sea	Med. spots
C1	Pesticides	DDT		W, B	w, s		H1		10+	7+	10+
C2	Pesticides	Hexachlorobenzene (HCB)		W, B	w, s		D2	X	10+	7+	4+
C3	Antifoulants	Tributyltin (TBT)	S, b				D2	X	5+		
C4	Antifoulants	Triphenyltin (TPT)	S, b						5+		
C5	Pharmaceuticals	?									
C6	Heavy metals	Mercury (Hg) ?	S, B	W, B	W, s	S, B	D2, H2	X	10+		
C7	Heavy metals	Cadmium (Cd)	S, B	W, B	W, s	S, B	D2, H2	X	10+	7+	10+
C8	Heavy metals	Lead (Pb)	S, B	W, B	W, s	S, B	D2, H2		10+	7+	10+
C9	Hydrocarbons	Anthracene	S, B		w, s	s, b		X	10	6+	2
C10	Hydrocarbons	Fluoranthene	S, B		w, s	s, b		(X)	10	6+	2
C11	Radionuclides	Tritium	W				D2		10+		
C12	Radionuclides	Cesium 137	W, B	w, s, b	w, s		D2		10+	10+	once
C13	Fertilisers/Nitrogen	Nitrate	W	W	W	W	D1, I1		10+	8+	10+
C14	Fertilisers/Nitrogen	Phosphate	W	W	W	W	D1		10+	8+	10+
C15	Organic matter	Organic Carbon	w, s	w	w, s		D2		10+	(10)	4+
C16	Organic matter	Organic Nitrogen					I1		10+	10+	4+

² Chemicals are noted as either mandatory for the matrix in block capitals or optional in lower case (W/w = Water, S/s= Sediment, B/b = Biota)

³ The links refer to the table numbers in ANNEX II of the EMMA report.

⁴ Water Framework Directive Priority Substance, http://ec.europa.eu/environment/water/water-framework/index_en.html

⁵ The data availability is indicative, rather than absolute. See WP2: *DataInventory3_Selected_Chemicals.xls* for full description of time series and matrix