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Agenda item 5: Marine Pollution Monitoring Regional Data Base and Related Quality Assurance Issues; Data Standards and Data Dictionaries

Data Standards and Data Dictionaries for Common Indicators 13, 14 and 17, including Bathing Water Quality Common Indicator 21

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Note by the Secretariat

In the framework of the Programme of Work and Budget for 2018–2019 of UN Environment/MAP (Decision IG.23/14), INFO/RAC is leading the work on the development of the “Info/MAP platform and platform for the implementation of IMAP fully operative and further developed, connected to MAP components' information systems and other relevant regional knowledge platforms, to facilitate access to knowledge for managers and decision-makers, as well as stakeholders and the general public” (output 1.5.1).

The EU funded EcAp-MED II Project is supporting this output by the development of a Pilot IMAP Compatible Data and Information System (IMAP (Pilot) Info System), that would enable the Contracting Parties to start reporting data as of mid-2019 for selected 10 IMAP Common Indicators and laying down the basis for building a fully operational IMAP Info System, by the end of the initial phase of IMAP, as provided for by Decision IG.22/7.

The criteria used for selecting the 10 Common Indicators as part of the IMAP (Pilot) Info System are:

- a) Maturity of Common Indicators as of 2017, in terms of monitoring experiences and best practices;
- b) Existing data collection and availability representing all IMAP Clusters;
- c) Availability of Common Indicators Guidance Factsheets and/or metadata templates.

The draft IMAP (Pilot) Info System is under development by INFO/RAC in close consultations with UN Environment/MAP Components. The IMAP (Pilot) Info System will be able to receive and process data according to the proposed Data Standards and Data Dictionaries (DDs and DSs) that set the basic information on data reporting within IMAP.

The first drafts of Data Standards and Data Dictionaries for the selected IMAP Common Indicators were reviewed by the Regional Meeting on IMAP Implementation: Best Practices, Gaps and Common Challenges (IMAP Best Practices Meeting), Rome, Italy, 10-12 July 2018. Following its outcome and the bilateral consultations among INFO RAC and MED POL the revised version of DSs and DDs for CI 13, 14, 17 and 21 is presented to the CorMon on Pollution Monitoring for review and feedback.

The updated proposal of DSs and DDs for IMAP Common Indicators 13, 14 and 17 related to eutrophication (EO5) and contaminants (EO9) were developed considering related IMAP Guidance Factsheets and existing Metadata Templates, as approved by the Meeting of the MED POL Focal Points, Rome, Italy, 29-31 May 2017 (UNEP(DEPI)/MED WG.439/20). Additionally, DSs and DDs for Common Indicator 21 were prepared with the support of ENPI NEI SEIS Project.

It should be noted that proposed DSs and DDs also build on respective relevant experience of INFO/RAC, as well as the experience gained in building other relevant data bases such as EMODnet Chemistry platform, SeaDataNet and WISE Data Dictionary maintained by EEA and available in EIONET. In such a way the IMAP (Pilot) Info System is interrelated with other regional marine databases (e.g. SeaDataNet, SeaDataCloud, EMODNET, etc.), which might contain or require a different number of metadata entries.

DSs and DDs are a set of information describing the content, format and structure of a database and relationship between the elements. Data Standards (DSs) are prepared in a form of Excel spreadsheets in which every row indicates a field to be filled by the data providers and aligned with the current MED POL Database for the common cases. The DSs are accompanied by Data Dictionaries (DDs) provided in a form a column next to each Data Standard or excel spreadsheet to guide the data provider. It is a crucial component of any relational database, invisible to most database users. Typically, only database administrators interact with the data dictionary.

For ease of reference, the current document presents updated proposal of Excel spreadsheets of DSs and DDs for Common Indicators 13, 14 and 17 in a Word File format. This updated proposal of DSs

and DDs provides broader data sets and associated dictionaries than requested as mandatory by the related IMAP Guidance Factsheets and Metadata Templates. In the Data Standards the **mandatory** data are represented in black and the **non-mandatory** ones in red. The possibility to fill in also non-mandatory fields is given to allow the Contracting Parties that already have monitoring systems collecting a wider set of data to also report them as the additional data. It is at the discretion of the Contracting Parties to decide on reporting on non-mandatory data sets. The list of CAS Registry Numbers (CAS Number), as the unique numerical identifier assigned by the Chemical Abstract Service (CAS) to every chemical substance described in the open scientific literature, are included as well.

Following the outcome of CORMON Pollution, the finalized DSs and DDs, along with the Metadata Templates, will be uploaded in the IMAP (Pilot) Info System and the consequent changes to the data base structure will be provided. In other words, once all the parameters and measurement units are defined, the correspondent data flow will be activated. This will be followed by a testing phase of the IMAP (Pilot) Info System that will be realized with the voluntary participation of interested countries. They will be invited to start providing data flow for the selected Common Indicators supported by the IMAP (Pilot) Info System. After the testing and reflection of its findings, it is expected to have the IMAP (Pilot) Info System fully operational to receive uploaded data for 10 selected IMAP Common Indicators.

It must also be noted that the current reporting through the MED POL Metadata Templates as confirmed by the Meeting of the MED POL Focal Points, Rome, Italy, 29-31 May 2017, will remain operative for reporting up-to-2018 monitoring data. Hopefully the new IMAP (Pilot) Info System will be able receiving the monitoring data for Common Indicators 13, 14, 17 and 21 generated in 2019 onward.

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List of Abbreviations / Acronyms

CI	Common Indicator
CORMON	Correspondence Group on Monitoring
DDs	Data Dictionaries
DSs	Data Standards
EcAp	Ecosystem Approach
EEA	European Environmental Agency
EO	Ecological Objective
IMAP	Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria
INFO/RAC	Regional Activity Centre for Information and Communication
MAP	Mediterranean Action Plan
MED POL	Programme for the Assessment and Control of Marine Pollution in the Mediterranean Sea
MED QSR	Mediterranean Quality Status Report
MSFD	Marine Strategy Framework Directive
PoW	Programme of Work
QA	Quality Assurance
QC	Quality Control

1. DATA STANDARDS AND DATA DICTIONARIES FOR IMAP COMMON INDICATORS 13, 14, 17 AND 21

1. The Data Standards and Data Dictionaries (DSs and DDs) are presented in tabular forms in the next sections and should guide the data providers into filling the future Metadata Templates, the formats to be developed in accordance with this basic information on data reporting. The Data Standards (DDs for Stations and DDs for characteristic parameters and the List of reference under each Common Indicator) are taken from related Excel files prepared by INFO/RAC, in close consultations with MED POL. Further extended instructions and in-depth details will be provided to facilitate the submission of the datasets by the Contracting Parties when the IMAP (Pilot) Info System will be launched, and related Metadata Templates will be operational.

2. The current MED POL Metadata Templates (excel spreadsheet formats), were designed for a relational database (SQL) containing metadata (e.g. station, year, coordinates, country, dates, QA/QC, etc.) associated to the data (namely, parameter) to be measured and reported (i.e. Chlorophyll-a, nutrients, contaminants, etc.). To this regard, the alignment of new IMAP Metadata Templates for the IMAP (Pilot) Info System with the current MED POL Metadata Template formats, will be provided through Data Standards and Data Dictionaries presented in this document. Even more, new IMAP Metadata Templates will offer enlarged possibilities for the Contracting Parties that are measuring additional parameters to report those to the IMAP (Pilot) Info System, as well.

3. Specifically, regarding Common Indicators 13 and 14, as a variety of methods (e.g. Chlorophyll *a* concentration - spectrophotometer, fluorometer, HPLC, in situ.) used for measurements with different underlying variability exists, an alignment of the initial proposal of Data Dictionaries by Info/RAC was proposed. A coding list for the used Analytical Methods corresponding to a combination of analyte, matrix and method in the general case is suggested. This list was obtained through a harvesting data tool from the SeaDataNet Project, which reference vocabulary is currently maintained by the BODC (British Oceanographic Data Center). The list is provided in an Excel file (List_P01) presented at the IMAP Best Practices Meeting.

4. The list of reference for the Common Indicator 17 on chemicals is also in use by the European Environmental Agency (EEA, WISE-Marine) and includes either the CAS numbers (Chemical Abstract Service reference number) or the EEA reference number (for particular EEA requirements). The IMAP Guidance Factsheets related to Common Indicator 17 (EO9) contain the agreed chemical compounds and those can be found in the EEA list (with its CAS number). Similarly, for eutrophication (EO 5) there is a list of parameters (as Data Dictionaries) aligned with the parameters for Common Indicators 13 and 14 provided in Guidance Factsheets for respective Common Indicators. The mandatory reporting is foreseen only for the biota and sediment matrices as agreed under IMAP Guidance Factsheets and for specific compounds under each Common Indicator, despite any other substance and matrix can be reported by applying then harmonized CAS number.

5. For Common Indicator 17, a list of biota matrices (e.g. species) is the major difference with the reference list for species from MED POL. However, this MED POL's list has also been checked against the EEA reference list. Finally, the List _Dictionary P01 (in accordance with EMODNET data policy) is also provided to include, if available, the pertinent code corresponding to a combination of analyte, matrix and method in the general case. This list is created similarly as for Common Indicators 13 and 14. However, this requirement is on a voluntary basis.

6. In line with the Guidance Fact Sheet for IMAP Common Indicator 21, related DDs establish reporting of required data i.e. CFU (Intestinal enterococci per 100 mL) / Number of Colony-formation-unit per analysis.

2. ECOLOGICAL OBJECTIVE 5

7. The INFO/RAC in close consultations with MED POL has developed the Data Standards and Data Dictionaries for Common Indicators 13 and 14 for EO5 within the Pollution cluster of the IMAP, as explained above. Below the characteristics of the proposed Data Dictionaries are shown which will create the basis for new Metadata templates structure for the reporting on these Common Indicators.

2.1 Common Indicators 13 and 14

Table 1. Data Standards (stations information) for CI13 and CI14.

Field	Description	List of values
Country Code	Enter member country code as ISO two digits, for example "IT" for Italy.	
National Station ID	Station code	
National Station Name	Station name	
Region	Administrative first level subdivision to which the station belongs to	
Latitude	Latitude of the station in the WGS84 decimal degrees reference system with at least 5 digits (xx.xxxxx).	
Longitude	<u>Longitude of the station in the WGS84 decimal degrees reference system with at least 5 digits (xx.xxxxx). Use positive values without '+' before numbers (for ex. 13.98078) for coordinates east of the of the Greenwich Meridian (0°) and negative values with '-' for coordinates west of the Greenwich Meridian (0°) (for ex. - 2.6893).</u> Longitude of the station in the WGS84 decimal degrees reference system with at least 5 digits (xx.xxxxx). Use negative values for coordinates west of the Greenwich Meridian (0°).	
Closest Coast	Station distance from the coast in km	
TCM Matrix	<u>Measure of seawater at the station</u> Measure of the environmental matrices in the station, enter one of the values in the list	W = Sea water column B = Biota BS = Biota and sediment BSW = Biota, sediment and water column BW = Biota and water column S = Sediment SW = Sediment and water column W = Water column
Sea Depth	Sea depth in meters	
Mixing	<u>Mixing property of the water column at the station point, enter one of the values in the list</u>	FM = Fully mixed PM = Partially mixed VS = Vertically stratified
Area Typology	Typology of the monitored area, enter one of the values in the list	R = Reference C = Coastal

Field	Description	List of values
		HS = Hot spot O = Other
Pressure Type	If the monitoring station is dedicated to monitor pressure, indicate the typology of pressure monitored, enter one of the values in the list	AP = Aquaculture plant RP = River Plume UWWTP = Urban Waste Water Treatment Plant <u>IP = Industrial Plant</u> <u>O = Others</u>
Remarks		

*non-mandatory

Table 2. Data standards (physicochemical information) for EO5 Common Indicator 13 and 14.

Field	Description	List of values
Country Code	Enter member country code as ISO two digits, for example "IT" for Italy.	
National Station ID	Station code	
Year	Year of sampling in AAAA format	
Month	Month of sampling in 1-12 format	
Day	Day of sampling in 1-31 format	
Time	Hour-minutes-seconds of sampling in HH:MM:SS format	
Sample ID	Sample Code if multiple replies are made with the same value as Year, Month, Day and Time	
Determin_Nutrients	Name of the physico-chemical parameter or of the nutrient, enter one of the values in the list in the "List_PhysicoChemical"	
Nutrients Seawater_unit	Unit of measurement of the physico-chemical parameter or nutrient, enter one of the values in the list	% = Oxygen saturation m = Secchi disks depth pH = pH °C = Temperature <u>µg/ℓ</u> = Chlorophyll <i>a</i> <u>µmol-N/ℓ</u> = Ammonium, Nitrate, Nitrite, Total Nitrogen <u>µmol-O₂/ℓ</u> = Dissolved Oxygen <u>µmol-P/ℓ</u> = Orthophosphates, Total Phosphorus <u>µmol-Si/ℓ</u> = <u>SilicateOrthosilicate</u> <u>µS/cm</u> = <u>Electrical</u> Conductivity

Field	Description	List of values
LOD_LOQ_Flag	<u>Enter the value LOQ in case the concentration value is less than the quantification limit or the value LOD in case the concentration value is less than the detection limit. In the other cases, leave the field empty. Enter the value '<' in case the concentration value is less than the quantification limit or the value '-' in case the concentration value is less than the detection limit. In the other cases, leave the field empty.</u>	<u>"LOQ = Concentration value below the quantification limit LOD = Concentration value below detection limit</u> <u><= Concentration value below the quantification limit</u> <u>= Concentration value below detection limit</u>
Concentration	Concentration measure	
Sample Depth	Sampling depth in meters	
LOQ	Limit of quantification	-
LOD	Limit of detection	-
Analytical Method	<u>Analytical method</u> <u>List of analytical methods, in line with IMAP, will be completed.</u> <u>Suggestion to use code from List P01 provided in an Excel file</u> <u>Analytical method</u>	
Remarks		

Table 3. List of physicochemical parameters under IMAP Guidance Factsheets EO5 and provided as mandatory in Data Dictionaries for Common Indicators 13 and 14.

Field	Description	Remarks
Temperature (water)	Water Temperature (°C)	
Salinity	Salinity (psu)	
Electrical eConductivity	Electrical eConductivity (µS/cm)	
Dissolved oxygen	Dissolved e Oxygen (µmol-O ₂ /L)	
Oxygen saturation	Dissolved O xygen - saturation percentage (%)	
pH	pH	
Chlorophyll a	Chlorofilla Chlorophylla (µg/L)	
Secchi disk depth	Secchi disk (m)	
Nitrate	Nitrate (N-NO₃ µmol+N/L)	
Nitrite	Nitrite (N-NO₂ µmol+N/L)	
Ammonium	Ammoni um acal nitrogen (N-NH ₃ µmol+N/L)	
Total phosphorus	Total P phosphorus (µmol+P/l)	
Orthophosphates	Orthophosphates (P-PO₄ µmol+P/L)	
Total nitrogen	Total N itrogen (µmol+N/L)	
Orthos Silicate	Reactive silicate (Si-SiO₂ µmol+Si/L)	

3. ECOLOGICAL OBJECTIVE 9

8. The INFO/RAC in close consultations with MED POL has developed the Data Standards and Data Dictionaries for Common Indicator 17 for EO9 within the Pollution cluster of the IMAP, as explained above. Below the characteristics of the proposed Data Dictionaries are shown which will

create the basis for new Metadata templates structure for the reporting on this Common Indicator. In addition, Data Dictionaries for Common Indicator 21 are shown.

3.1 Common Indicator 17

Table 4. Data Dictionaries (Stations Information) for Common Indicator 17 within EO9.

Field	Description	List of values
Country Code	Enter member country code as ISO two digits, for example "IT" for Italy.	
National Station ID	Sation code	
National Station Name	Station name	
*_Region	Adminstrative subdivision after country which the station belongs to (according to the country subdivision)	
Latitude	Latitude of the station in the WGS84 decimal degrees reference system <u>with at least 5 digits (xx.xxxxx).</u> <u>with at least 6 digits (xx.xxxxxx).</u>	
Longitude	Longiitude of the station in the WGS84 decimal degrees reference system <u>with at least 5 digits (xx.xxxxx).</u> Use positive values without '+' before numbers (for ex. 13.98078) for coordinates east of the of the Greenwich Meridian (0°) and negative values with '-' for coordinates west of the Greenwich Meridian (0°) (for ex. - 2.6893). <u>with at least 6 digits (xx.xxxxxx).</u> Use negative values for coordinates west of the Greenwich Meridian (0°).	
*_Closest Coast	Station distance from the coast in km	
TCM Matrix	Environmental matrix measured in the station, enter one value of the list	B = Biota BS = Biota and sediment BSW = Biota, sediment and sea water column BW = Biota and sea water column S = Sediment SW = Sediment and sea water column W = Sea water column
Sea Depth	Sea depth in meters	
Area Tipology	Indicate the typology of the monitored area, enter one of the values in the list	R = Reference C = Coastal HS = Hot spot O = Others

PressureType	<p>If the monitoring station id dedicated to monitor pressure, indicate the typology of pressure monitored, enter one of the values in the list</p> <p>If the monitoring station id dedicated to monitor pressure, indicate the typology of pressure monitored, enter one of the values in the list</p>	<p>IP = Industrial Plants MT = Maritime Traffic O = Others</p>
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*non-mandatory

Table 5. Data Dictionaries (contaminants information)

Field	Description	List of values
Country Code	Enter member country code as ISO two digits, for example "IT" for Italy.	
National Station ID	Station code	
Year	Year of sampling in YYYY format	
Month	Month of sampling in 1-12 format	
Day	Day of sampling in 1-31 format	
Time	Hours-minutes-seconds of sampling in HH:MM:SS format	
Sample ID	Sample Code if multiple replies are made with the same value as Year, Month, Day and Time	
Matrix	Sample matrix, enter one value of the list	W = Water S = Sediments B = Biota
Determin Haz Subs Name	<p>Name of the contaminant, enter one value of the column 'Label' of the list 'List contaminants'</p> <p>Name of the contaminant, enter one value of the column 'Value' of the list 'List contaminants'</p>	
Determin Haz Subs ID	ID of the contaminant, enter one value of the column 'ID_Contaminant' of the list 'List_contaminants'	
CAS Number	CAS number of contaminant, enter one value of the column CAS Number of list 'List_contaminants'	
Haz Subs_unit	Unit of measurement for the contaminant, enter one value of the list	µg/l = water matrix µg/kg = sediments and biota matrices

Haz Subs_WD	For sediment or biota, specify dry or wet weight, enter one value of the list	WW = Wet weight DW = Dry weight
LOD_LOQ_Flag	Enter the value '<' in case the concentration value is less than the quantification limit or the value '[' in case the concentration value is less than the detection limit. In the other cases, leave the field empty.	<= Concentration value below the quantification limit [= Concentration value below detection limit
Concentration	Concentration value. In the case of analytes sums in which at least one is not less than the LOQ, use the Concentration field with the sum of solely quantifiable analytes (i.e not lower than the LOQ). In case the concentration value of the single analyte or all the analytes constituent the sum is less than the LOQ, the LOD_LOQ_Flag field and the Concentration field should be used as follows: in the case of a single analyte enter the value of LOQ/2; in the case of analytical additions, enter the zero value taking into account that the individual substances below the quantification limit do not contribute to the value of the sum.	
Sample Depth	Sampling depth in meters	
Salinity	For water matrix: Salinity (psu)	
Temperature	For water matrix: Temperature (°C)	
Dissolved oxygen	For water matrix: dissolved oxygen (µmol O ₂ /l)	
*_Grain Type	For sediment matrix: typology of sediment, enter one value of the list	CS = Coarse Sand FS = Fine Sand G = Gravel M = Mud MS = Middle Sand
Fraction	Per sediment matrix: maximum size of sediment particles in µm	
Sediment Depth SedimentTop	For the sediment matrix: <u>Depth of the collected sample of sediment, measured as a range, in centimeters, starting at the seafloor surface. The range would start by zero if the top</u>	

	of the sediment sample is the seafloor surface. For ex. insert '0-10' if 10 cm of sediments have been sampled starting from seafloor surface or insert '5-15' if 10 cm of sediments have been sampled starting from 5 cm from the seafloor surface. For the sediment matrix: distance between the upper limit of the analyzed sediment and the sediment surface in cm. If the upper limit coincides with the sediment surface, enter the value '0'	
SedimentBottom	For the sediment matrix: distance between the lower limit of the analyzed sediment and the sediment surface in cm.	-
*TC	For sediment matrix: Total carbon content in % unit	-
*TOC	For sediment matrix: Total organic carbon in % unit	-
*TIC	For sediment matrix: Total inorganic carbon in % unit	-
*TN	For sediment matrix: Total nitrogen content in % unit	-
*TON	For sediment matrix: Total organic nitrogen in % unit	
*TIN	For sediment matrix: Total inorganic nitrogen in % unit	
Species_IDSpecies	For the biota matrix: monitored species. Enter one value of the column 'ID_Species' of the list 'List_species'For the biota matrix: monitored species	
Species_Name	For the biota matrix: monitored species. Enter one value of the column 'Label' of the list 'List_species'	
Specimen_lenght	For the biota matrix: length of specimen in cm. In case of pooling, indicate mean length	
Specimen_length_sd	For the biota matrix: Standard deviation of average length of specimens in a pool in cm.	
Specimen_weight	For the biota matrix: weight of specimen in g. In case of pooling, indicate mean weight.	

<u>Specimen weight sd</u>	<u>For the biota matrix: Standard deviation of average weight of specimens in a pool in g.</u>	
Pooling	In case of pooling, describe the content of pooling as number of specimens and other methodological issues	
<u>Extractable Organic Matter</u>	<u>Extractable Organic Matter in mg/g</u>	
Tissue	For biota matrix: tissue element of the monitored species, enter one of the list values	<p><u>BL</u> = Fluids - Blood. Includes haemolymph, erythrocytes, haemocytes, serum (blood component without cells and clotting factors) and plasma (serum including clotting factors)</p> <p><u>EG</u> = Eggs. Includes bird eggs and fish eggs (roe). Use the remarks field to provide additional information, if necessary.</p> <p><u>FA</u> = Tissues - Fat. Any type of adipose tissue or organ. Includes the form code BB for "Blubber".</p> <p><u>GO</u> = Organs - Gonads. Includes female gonads (ovaries) and male gonads (testes). Use the remarks field to provide additional information, if necessary.</p> <p><u>KI</u> = Organs - Kidney. Use the remarks field to provide additional information, if necessary.</p> <p><u>LI</u> = Organs - Liver. Includes hepatopancreas. Use the remarks field to provide additional information, if necessary.</p> <p><u>MU</u> = Tissues - Muscle. Any type of muscle tissue or organ. Includes the former code TM for "Tail muscle".</p> <p><u>OT</u> = Other. Use the remarks field to provide additional information, if necessary.</p> <p><u>ST</u> = Tissues - Soft tissue. Includes any body tissue except mineralized tissue (hard tissue)</p> <p>BA = Baleen BB = Blubber BC = Blood cells BL = Blood BO = Bone BR = Brain BS = Blood serum BW = Body wall EG = Eggs (bird) EH = Egg homogenate of yolk and albumin EP = Epidermis (skin) FA = Fat FE = Feathers</p> <p>GI = Gill GO = Gonads (undeterminable sex) KI = Kidney LI = Liver MU = Muscle OV =</p>

		Ovaries (gonads—female) RO = Roe (fish) SB = Soft body SH = Shell TM = Tail muscle WO = Whole body
<u>Fat Content</u>	<u>Fat content as percentage of total wet matter</u>	
<u>Extractable Lipid</u>	<u>Extractable Lipid Percent. Insert as a percentage the extractable lipid content of the material analysedanalyzed.</u>	
<u>Lipid Weight</u>	<u>Lipid Weight Percent Insert as a percentage the lipid weight</u>	
<u>Analytical Method</u>	Analytical method	
<u>LOQ</u>	Limit of quantification	
<u>EmodnetCodeP01</u>	Code of the parameter/ EMODNet method according to the dictionary P01, enter one value of the list "List_dictionary_P01"	
<u>Remarks</u>	<u>Notes</u>	

*non-mandatory under IMAP Guidance Factsheets

Table 6. Example of the List of physicochemical parameters under IMAP Guidance Factsheets EO9, that are also available in the EEA reference list of contaminants (Code list), showing compounds provided as mandatory in the Data Dictionaries for Common Indicator 17 (PAHs not shown). The full list is provided with related Excel files presented at the IMAP Best Practices Meeting.

ID_Contaminant	Label	CAS Number	Matrix	Mandatory	Additional
CAS_309-00-2	Aldrin	309-00-2	Sediments	Y	
CAS_7429-90-5	Aluminium and its compounds	7429-90-5	Sediments	Y	
CAS_7440-43-9	Cadmium and its compounds	7440-43-9	Biota, Sediments	Y	
CAS_60-57-1	Dieldrin	60-57-1	Sediments	Y	
CAS_58-89-9	Gamma-HCH (Lindane)	58-89-9	Biota, Sediments	Y	
CAS_118-74-1	Hexachlorobenzene	118-74-1	Biota, Sediments	Y	

CAS_743 9-92-1	Lead and its compounds	7439-92-1	Biota, Sediments	Y	
CAS_743 9-97-6	Mercury and its compounds	7439-97-6	Biota, Sediments	Y	
CAS_376 80-73-2	PCB 101 (2,2',4,5,5'-pentachlorobiphenyl)	37680-73-2	Biota, Sediments	Y	
CAS_325 98-14-4	PCB 105 (2,3,3',4,4'-pentachlorobiphenyl)	32598-14-4	Biota, Sediments	Y	
CAS_315 08-00-6	PCB 118 (2,3',4,4',5- pentachlorobiphenyl)	31508-00-6	Biota, Sediments	Y	
CAS_350 65-28-2	PCB 138 (2,2',3,4,4',5'- hexachlorobiphenyl)	35065-28-2	Biota, Sediments	Y	
CAS_350 65-27-1	PCB 153 (2,2',4,4',5,5'- hexachlorobiphenyl)	35065-27-1	Biota, Sediments	Y	
CAS_383 80-08-4	PCB 156 (2,3,3',4,4',5- hexachlorobiphenyl)	38380-08-4	Biota, Sediments	Y	
CAS_350 65-29-3	PCB 180 (2,2',3,4,4',5,5'- heptachlorobiphenyl)	35065-29-3	Biota, Sediments	Y	
CAS_701 2-37-5	PCB 28 (2,4,4'-trichlorobiphenyl)	7012-37-5	Biota, Sediments	Y	
CAS_356 93-99-3	PCB 52 (2,2',5,5'-tetrachlorobiphenyl)	35693-99-3	Biota, Sediments	Y	
EEA_33- 38-5	Polychlorinated biphenyls(7 PCB: 28,52,101,118,138,153,180)		Biota, Sediments	Y	
EEA_32- 03-1	Total DDT (DDT, p,p' + DDT, o,p' + DDE, p,p' + DDD, p,p')		Biota, Sediments	Y	
CAS_744 0-66-6	Zinc and its compounds	7440-66-6	Biota, Sediments		Y

Table 7. Example of the List of available reference species (Code list) for Data Dictionaries and Data Standards of the IMAP (Pilot) Info System for EO9 (CI17 and CI20).

Species code	Species
2279156	Holothuria tubulosa
2357093	Hoplostethus atlanticus
2481126	Larus
2481156	Larus glaucoides
2481127	Larus hyperboreus
2409391	Lepidorhombus whiffiagonis
2419875	Leucoraja naevus
5213960	Limanda limanda
2301117	Littorina littorea
2415070	Lophius budegassa
2415075	Lophius piscatorius
2291262	Lymnaea palustris
2286995	Macoma balthica
5214420	Mallotus villosus
2415822	Melanogrammus aeglefinus
2415788	Merlangius merlangus
2415643	Merluccius merluccius
2415777	Micromesistius poutassou
5214022	Microstomus kitt
5214883	Molva dypterygia

5214880	Molva molva
5220008	Monodon monoceros
4284897	Mullus barbatus
7791733	Mya arenaria
7865139	Mya truncata
2333785	Myoxocephalus scorpius
8288896	Mytilus edulis
2285683	Mytilus galloprovincialis
2303019	Nassarius reticulatus
2226962	Nephrops norvegicus
5193449	Nucella lapillus
2286060	Ostrea edulis

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Table 8. Data Dictionaries (stations information)

Field	Description	List of values
Country Code	Enter member country code as ISO two digits, for example "IT" for Italy.	
National StationID	Station code	
National Station Name	Station name	
*Region	Administrative subdivision after country which the station belongs to	
Latitude	Latitude of the station in the WGS84 decimal degrees reference system with at least 5 digits (xx.xxxxx).	
Longitude	Longitude of the station in the WGS84 decimal degrees reference system with at least 5 digits (xx.xxxxx). Use positive values without '+' before numbers (for ex. 13.98078) for coordinates east of the of the Greenwich Meridian (0°) and negative values with '-' for coordinates west of the Greenwich Meridian (0°) (for ex. - 2.6893).	
*Closest Coast	Station distance from the coast in km	
Matrix	Environmental matrix measured in the station, enter one value of the list	W = Water column
Beach name	Name of the beach or coastal area	
Sea Depth	Sea depth in meters	
Mixing	Mixing property of the water column at the station point, enter one of the values in the list	FM = Fully mixed PM = Partially mixed VS = Vertically stratified

*non-mandatory

Table 9. Data Dictionaries for Microbiological parameters.

CFU (Intestinal Enterococci per 100 mL)	Number Colony-Formation-Unit per analysis	
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