



JRC TECHNICAL REPORTS

Marine chemical contaminants – support to harmonized MSFD reporting

*Substances considered
for MSFD descriptor 8*

Victoria Tornero, Georg Hanke

2018

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JRC Science Hub

<https://ec.europa.eu/jrc>

JRC 112387

EUR 29281 EN

PDF ISBN 978-92-79-88542-6 ISSN 1831-9424 doi:10.2760/804610

Luxembourg: Publications Office of the European Union, 2018

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How to cite this report: Tornero and Hanke, *Marine chemical contaminants – support to harmonized MSFD reporting: Substances considered for MSFD descriptor 8*, EUR 29281, Publications Office of the European Union, 2018, ISBN 978-92-79-88542-6, doi:10.2760/804610, JRC112387.

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Acknowledgements

A. Haber, A. Mauffret, A. Oros, A. Serrano, A. Ausili, C. Maggi, C. Robinson, D. Bijstra, D. ten Hulscher, E. McGovern, I. Del Barrio, I. Hatzianestis, J. Bellas, J.A. Campillo, J. Foden, J. Lušić, J. Mannio, K. Antoniadis, K. Kamenova, L.Viñas, M. Fafandjel, M. Furdek Turk, M. Korsjukov, M. Laht, M. Nicolaus, N. Wessel, O. Bajt, O. Rowe, P. Whitehouse, S. Dimitrova, S. Schmolke, T. Hema, T. Porsbring, T. Zalewska, U. Kamman, U. Pirntke, V. León,

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Abstract

The 2018 reporting on updates of the Marine Strategy Framework Directive (MSFD) Articles 8, 9 and 10 will be supported by web forms to aid completion of the XML files by Member States. It is planned to use, wherever possible, drop-down lists to facilitate data entry, thereby also helping to ensure consistency in the data entered.

This report outlines a process to prepare a list of contaminants for use in 2018 MSFD D8 reporting (as drop-down lists in the reporting web forms). This list assists in using a harmonized nomenclature for the unambiguous identification of the substances, thereby facilitating consistency in the data entry.

Additionally, the compilation of the list allows for comparisons between Member States and marine regions that may support the processes of selection of relevant contaminants for D8 assessments.

1 Introduction

According to article 17(2) of the Marine Strategy Framework Directive (MSFD, 2008/56/EC¹ and amendment EU 2017/845²), EU Member States (MS) have to update their marine strategies every six years. This requires articles 8 (initial assessment), 9 (determination of the Good Environmental Status) and 10 (establishment of targets) to be updated by 2018.

The 2018 reporting system will be supported by web forms to aid completion of the XML files by MS. Wherever possible, drop-down lists will be used to facilitate consistency in the data entry.

This report outlines the process carried out to compile a list of contaminants for use in the 2018 descriptor 8 (criterion D8C1) reporting web forms. This list will ensure data consistency and avoid ambiguities resulting from use of different chemical's names and identifiers.

Furthermore, the collection of the substances considered by MS for MSFD reporting allows for comparisons between countries and marine regions, as a basis for supporting the process of selection of relevant contaminants for the assessment of Good Environment Status (GES) for D8.

This work is part of a process to support regulators in order to select relevant chemical contaminants to be assessed in their jurisdictional area, thus aiming at EU national authorities but also at Regional Sea Conventions (RSC) in the shared marine basins.

(¹) Directive 2008/56/EC of the European parliament and of the council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). <http://eur-lex.europa.eu/LexUriServ/LexUriS-erv.do?uri=OJ:L:2008:164:0019:0040:EN:PDF>

(²) Commission Directive (EU) 2017/845 of 17 May 2017 amending Directive 2008/56/EC of the European Parliament and of the Council as regards the indicative lists of elements to be taken into account for the preparation of marine strategies. <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1495097018132&uri=CELEX:32017L0845>

2 Methodology

For MSFD descriptor 8, there is a need to make available an operational list of contaminants (substances) from which MS can select those to be reported (or add new ones if needed), thereby also helping consistency in the data entered and avoiding ambiguities resulting from use of different chemical's names and identifiers.

The JRC published a technical report (Tornero and Hanke, 2017) that compiles a single reference list of more than 2700 potential marine contaminants in order to support the harmonized and comparable assessment of chemical contaminants in the marine environment. As agreed at the WG GES 18 meeting (GES_18-2017-02), this reference list was circulated to the MSFD Expert Network on Contaminants in order to identify the substances that MS intended to include in the 2018 MSFD reporting. The MSFD Expert Network on Contaminants is an informal network that has been set-up in order to exchange information and support MS in MSFD implementation, while also providing interactions with the RSC.

A first round of consultation with experts was carried out in November-December 2017, which resulted in a first preliminary list of approximately 400 contaminants. A second round of consultation was undertaken in February-March 2018 in order to confirm the substances that MS will actually use for 2018 MSFD reporting.

Experts from 17 MS contributed to this process: Bulgaria (BG), Croatia (HR), Cyprus (CY), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Ireland (IE), Italy (IT), Malta (MT), Netherlands (NL), Poland (PL), Romania (RO), Spain (ES), Sweden (SE), and United Kingdom (UK).

The list provides a harmonized nomenclature for the unambiguous identification of the chemical substances. The Chemical Abstracts service (CAS) numbers are included, when available, as unequivocal identifiers. Moreover, for harmonization purposes, the substance's names in the list, and that will appear in the prefilled web forms, are those of the WISE³ vocabulary. Yet, the EEA will also provide a list with all these substances and their corresponding codes from the WISE, ICES⁴ and/or BODC⁵ vocabularies. This should avoid any uncertainty concerning the correct identification of the substances.

Furthermore, it is necessary to ensure that, when reporting on a group of substances, all the components of such group are considered. Consequently, only groups with clearly identified components (e.g. total cyclodiene pesticides (aldrin + dieldrin + endrin + isodrin)) will be included in the prefilled reporting web forms (see below *progress on substance grouping*). The web forms will also list the individual substances (or congeners) belonging to each group, but they should be reported separately only if they are also considered independently and not solely as a member of the group.

The resulting final list was delivered to the European Environmental Agency (EEA) in April 2018 for its inclusion in the drop-down menus for 2018 MSFD D8 reporting.

⁽³⁾ WISE - Water Information System for Europe. <http://dd.eionet.europa.eu/vocabulary/wise/ObservedProperty/>

⁽⁴⁾ ICES - International Council for the Exploration of the Sea. <http://vocab.ices.dk/> (vocabulary PARAM)

⁽⁵⁾ BODC - British Oceanographic Data Centre. <http://vocab.nerc.ac.uk/collection/P02/current/>

3 Results

3.1 Substances for MSFD reporting

The table 1 displays the resulting final list of contaminants for the MSFD D8 reporting web forms. It consists of 333 substances or groups of substances (which are shaded in the table).

There are considerable differences between MS regarding the contaminants considered for MSFD D8. Although the specific substances indicated by each country are not presented here, the table 1 shows the proportion of MS reporting on every particular substance or group of substances (which can be 0% if, as explained above, the substance is in the list because it belongs to a group, but is not going to be reported individually). Only 5 substances are considered by all MS contributing to this compilation process and 109 substances (about 33% of the total) are indicated by only one MS

These differences are further reflected in the figure 1, which represents the number of substances considered by different number of MS. Here, the total number of substances is 215 since the groups (e.g. PBDE, PAHs, PCBs, etc.) are taken into account as one single substance. It can be seen that most contaminants are considered by only one MS and very few substances are considered by all or the majority of MS. While it is true that the substances of concern can vary depending upon the local area, country and (sub)region, the differences found, also between countries sharing regional waters, seem to point to a lack of harmonized criteria for selecting relevant contaminants.

The number of contaminants reported also varies considerably between MS, with some countries reporting on less than 20 substances or groups of substances and others on more than 100 and until 164. Nevertheless, it is important to highlight that some MS expect to report on the results of their status assessments, which involve a degree of data aggregation amongst substances.

3.1.1 WFD substances

As stated in the new MSFD Commission Decision⁶, MS have to consider the priority substances or River Basin Specific Pollutants already identified under the Water Framework Directive (WFD)⁷, but also to establish, through regional or subregional cooperation, a list of additional contaminants that may give rise to pollution effects. Therefore, the analysis of synergies and complementarities with the WFD as well as at regional level should improve progress in harmonization and selection of relevant contaminants for MSFD D8.

3.1.1.1 Priority substances (PS)

All current PS and certain other pollutants (2013/39/EU⁸) appear in the list of contaminants for MSFD D8 reporting, but, as shown in the table 2, they are not equally considered by all

⁽⁶⁾ Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017D0848&from=EN>

⁽⁷⁾ Directive 2000/60/EC of the European parliament and of the council of 23 October 2000 establishing a framework for Community action in the field of water policy. http://eurlex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF

⁽⁸⁾ Directive 2013/39/EU of the European parliament and of the council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0039&from=EN>

MS. While some WFD PS might not be relevant contaminants for the marine environment or for a particular MS, the differences encountered also between MS sharing the same marine region may indicate lack of harmonization in the criteria followed to exclude WFD PS from the MSFD assessments. Yet, as mentioned above, some MS perform status assessments for a number of indicators that comprise data aggregation amongst substances, as e.g. all “WFD substances in the water column” of coastal waters.

3.1.1.2 Watch list

The table 1 also shows that the substances included in the WFD Watch list⁹ are mostly not considered for MSFD D8 reporting.

3.1.1.3 River Basin Specific Pollutants (RBSP)

Regarding RBSP (substances of national or local concern that form part of the quality elements for “good ecological status” up to 1 nautical mile under the WFD), the table 3 compiles those reported as causing failure in the 2nd River Basin Management Plans (based on the information from 14 MS gathered by the EEA¹⁰).

Findings are summarized in the figure 2. It can be seen that the majority of non-compliant RBSP are considered for MSFD D8 reporting by those MS where failure has been observed. However, there are also many RBSP (even those that are also WFD PS) that are not used for MSFD by all the MS reporting non-compliance. Furthermore, a number of non-compliant RBSP is not considered for MSFD by any of the MS analysed.

These results might help trigger discussions for the identification of relevant RBSP for the marine environment. For example, substances like arsenic and zinc are non-compliant RBSP in most MS, but only about 50% of MS consider them for MSFD reporting. Other non-compliant RBSP, such as hydrogen cyanide, are not in the list of contaminants for MSFD reporting, but they have been included in the list of marine contaminants with potential sea-based sources (Tornero and Hanke, 2016).

3.1.2 Substances of the lists of chemicals of the Regional Sea Conventions (RSC)

Besides the differences mentioned above regarding the use of WFD substances for MSFD reporting, there are also differences regarding the consideration of substances from the current lists of chemicals of the four European RSC (Barcelona Convention, Black Sea Commission, HELCOM, and OSPAR).

The tables 4.1-4.4 show that not all substances identified as a “priority” or “of concern” in a RSC are considered for MSFD by all MS belonging to that RSC. Interestingly, there are also substances prioritized under the RSC that are not used for MSFD reporting by any MS (e.g. toxaphene, clotrimazole, cyclododecane, methoxychlor, or musk xylene).

(⁹) Commission Implementing Decision (EU) 2015/495 of 20 March 2015 establishing a watch list of substances for Union-wide monitoring in the field of water policy pursuant to Directive 2008/105/EC of the European Parliament and of the Council. <http://eur-lex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:32015D0495&from=IT>

(¹⁰)https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_FailingRBSP/SWB_FailingRBSP?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no

3.1.3 Other contaminants

The figure 3 shows that, although most of the compiled contaminants are already considered under the WFD (PS and certain other pollutants, Watch list and RBSP) and/or RSC, there is also a significant number of other contaminants that MS plan to use for MSFD reporting.

The table 5 gathers the list of those additional contaminants considered for MSFD reporting. It can be seen that most of them are used by only one MS and that there are substantial differences both between countries from the same region and between marine regions.

These findings denote that the process of selection of additional relevant contaminants at regional or subregional level, as required in the new MSFD Commission Decision, is not harmonized and still needs further discussions and agreement.

4 Conclusions and recommendations

The occurrence of chemical contaminants in the marine environment differs locally, between countries, sub-regions and marine regions. Their assessments require preparatory steps for the identification of the relevant substances to be monitored. It is though important that the substances are considered and excluded on the basis of objective criteria.

- The compilation of the list of contaminants for use in the 2018 MSFD reporting web forms supports harmonized reporting for Descriptor 8 by providing a harmonized nomenclature, thereby facilitating the unambiguous identification of the substances and consistency in the data entry.
- The resulting list contains 333 substances or group of substances. Most of them are already considered under the WFD and/or RSC, but there is also a considerable number of additional contaminants that MS plan to use for MSFD D8.
- There are notable differences between MS regarding the substances considered for MSFD D8 reporting. While it is true that the substances of concern can vary depending upon the country or region, the differences found, also between countries sharing regional waters, seem to point to a lack of harmonized criteria for selecting relevant contaminants. Obviously, this would preclude the prospect of an equal level of environmental protection in all European marine waters as required by the MSFD.
- Many non-compliant RBSP are not used for MSFD reporting by the MS reporting non-compliance.

Consequently, the following recommendations are proposed to increase consistency and comparability of MSFD D8 assessments:

- The process of exclusion of WFD PS from MSFD assessments should be clearly documented and justified. MS should agree on those criteria of exclusion and this may be done through the MSFD Expert Network on Contaminants.
- A common understanding on the consideration of relevant RBSP for MSFD purposes is needed. A non-compliant RBSP might trigger further investigation in marine waters, particularly when non-compliance is reported also in other MS within the same marine region.
- Even though the RSC are developing actions for the identification of relevant contaminants in their marine environments, a formal initiative is needed to properly harmonize methodological approaches at EU level.
- New options such as non-target screening techniques and specific targeted joint monitoring campaigns should be explored in order to find a cost-effective and consistent way to account for the constantly increasing number of potential contaminants in the marine environment. The JRC, as science & policy interface, may support the monitoring and assessment of chemical contaminants in marine waters for MSFD policy implementation and related processes, in close collaboration with EU Member States and Regional Sea Conventions.

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List of abbreviations and definitions

Barcelona Convention: Convention for the Protection of Marine Environment and the Coastal Region of the Mediterranean

Black Sea Commission: Convention on the Protection of the Black Sea against Pollution

BSIMAP: Black Sea Integrated Monitoring and Assessment Programme

CAS: Chemical Abstracts Service

GES: Good Environmental Status

HELCOM: Convention on the Protection of the Marine Environment in the Baltic Sea

LBS Protocol: Protocol for the protection of the Mediterranean Sea from Land-Based Sources and Activities

MEDPOL: Marine pollution assessment and control

MSFD: Marine Strategy Framework Directive

PS: Priority Substance

RBSP: River Basin Specific Pollutants

RSC: Regional Sea Convention

WFD Other Pollutants: Pollutants included in the Annex II of Directive 2013/39/EU and for which a European standard applies, but not in the priority substances list

WFD Watch list: New mechanism is to support the identification of priority substances for regulation under WFD

WFD: Water Framework Directive

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Table 1. Substances and groups of substances for use in 2018 MSFD reporting web forms

(based on the information provided by 17 MS)

PS: Priority Substance; PHS: Priority Hazardous Substance; Other Pollutants: Pollutants in the Annex II of Directive 2013/39/EU and for which a European standard applies, but not in the PS list; Watch list: New mechanism to support the identification of PS for regulation under WFD.

CAS number	Substance name	% MS reporting	WFD
74070-46-5	Aclonifen	18	PS
15972-60-8	Alachlor	35	PS
57-63-6	17-Alpha-ethinylestradiol (EE2)	6	1st Watch list. Suggested for 2nd Watch list
7429-90-5	Aluminium and its compounds	24	
834-12-8	Ametryn	6	
95-85-2	2-Amino-4-chlorophenol	6	
62-53-3	Aniline	6	
7440-36-0	Antimony	12	
7440-38-2	Arsenic and its compounds	53	
1912-24-9	Atrazine	47	PS
2642-71-9	Azinphos-ethyl	18	
86-50-0	Azinphos-methyl	18	
7440-39-3	Barium	24	
25057-89-0	Bentazone	18	
71-43-2	Benzene	47	PS
7440-41-7	Beryllium	6	
50-28-2	17beta-estradiol (E2)	12	1st Watch list. Suggested for 2nd Watch list
42576-02-3	Bifenox	12	PS
80-05-7	Bisphenol A	6	
7440-42-8	Boron	12	
314-40-9	Bromacil	6	
Not applicable	Brominated diphenylethers (congener numbers 28, 47, 99, 100, 153 and 154)	76	PS
Not applicable	Brominated diphenylethers (congener numbers 28, 47, 66, 85, 99, 100, 153, 154, and 183)	18	
41318-75-6	BDE 28 (2,4,4'-tribromodiphenyl ether)	6	
5436-43-1	BDE 47 (2,2',4,4'-tetrabromodiphenyl ether)	6	
189084-61-5	BDE-66 (2,3',4,4'-tetrabromodiphenyl ether)	0	
182346-21-0	BDE 85 (2,2',3,4,4'-pentabromodiphenyl ether)	0	
60348-60-9	BDE 99 (2,2',4,4',5-pentabromodiphenyl ether)	6	
189084-64-8	BDE 100 (2,2',4,4',6-pentabromodiphenyl ether)	6	
68631-49-2	BDE 153 (2,2',4,4',5,5'-hexabromodiphenyl ether)	6	
207122-15-4	BDE 154 (2,2',4,4',5,6'-hexabromodiphenyl ether)	6	
207122-16-5	BDE-183 (2,2',3,4,4',5',6-heptabromodiphenyl ether)	0	
1163-19-5	Bis(pentabromophenyl) ether	18	
40088-47-9	Tetrabromodiphenylether	6	PHS
32534-81-9	Pentabromodiphenylether	24	PHS
36483-60-0	Hexabromodiphenylether	6	PHS

CAS number	Substance name	% MS reporting	WFD
1689-84-5	Bromoxynil	6	
7440-43-9	Cadmium and its compounds	100	PHS
298-46-4	Carbamazepin	6	
56-23-5	Carbon tetrachloride	24	Other pollutants
57-74-9	Chlordane	12	
470-90-6	Chlorfenvinphos	35	PS
1698-60-8	Chloridazon	12	
85535-84-8	Chloroalkanes C10-13	47	PHS
106-47-8	4-Chloroaniline	12	
108-90-7	Chlorobenzene	12	
42074-68-0	1-Chloro-2-(chlorodiphenylmethyl)benzene	6	
95-57-8	2-Chlorophenol	12	
108-43-0	3-Chlorophenol	12	
106-48-9	4-Chlorophenol	12	
120-83-2	2,4-Dichlorophenol	12	
58-90-2	2,3,4,6-Tetrachlorophenol	6	
15950-66-0	2,3,4-Trichlorophenol	6	
933-78-8	2,3,5-Trichlorophenol	6	
933-75-5	2,3,6-Trichlorophenol	6	
95-95-4	2,4,5-Trichlorophenol	12	
88-06-2	2,4,6-Trichlorophenol	12	
100-44-7	α -Chlorotoluene	6	
95-49-8	2-Chlorotoluene	6	
15545-48-9	Chlorotoluron	6	
2921-88-2	Chlorpyrifos	41	PS
7440-47-3	Chromium and its compounds	53	
18540-29-9	Chromium VI	24	
1702-17-6	Clopyralid	6	
7440-48-4	Cobalt and its compounds	18	
7440-50-8	Copper and its compounds	65	
56-72-4	Coumaphos	12	
108-39-4	3-Methylphenol	6	
106-44-5	4-Methyl-phenol	6	
15831-10-4	m-/p-Cresol	6	
57-12-5	Free cyanide	18	
28159-98-0	Cybutryne	24	PS
Not applicable	Total cyclodiene pesticides (aldrin + dieldrin + endrin + isodrin)	29	Other pollutants
309-00-2	Aldrin	18	Other pollutants
60-57-1	Dieldrin	18	Other pollutants
72-20-8	Endrin	6	Other pollutants
465-73-6	Isodrin	0	Other pollutants
52315-07-8	Cypermethrin	18	PS
94-75-7	2,4-dichlorophenoxyacetic acid, 2-4 D	18	
Not applicable	Total DDT (DDT, p,p' + DDT, o,p' + DDE, p,p' + DDD, p,p')	41	Other pollutants
53-19-0	o,p'-DDD	12	

CAS number	Substance name	% MS reporting	WFD
72-54-8	p,p'-DDD	12	
3424-82-6	o,p'-DDE	12	
72-55-9	p,p'-DDE	12	
789-02-6	DDT, o,p'	0	
50-29-3	DDT, p,p'	47	Other pollutants
8065-48-3	Demeton	18	
919-86-8	Demeton-S-methyl	12	
17040-19-6	Demeton-S-methylsulfon	12	
333-41-5	Diazinon	12	
1918-00-9	Dicamba	6	
1194-65-6	Dichlobenil	6	
95-76-1	3,4-Dichloroaniline	12	
95-50-1	1,2-Dichlorobenzene	18	
541-73-1	1,3-Dichlorobenzene	18	
106-46-7	1,4-Dichlorobenzene	18	
41999-84-2	1,4-Dichloro-2,5-bis(dichloromethyl)benzene	6	
107-06-2	1,2-Dichloroethane	41	PS
540-59-0	1,2-Dichloroethene	12	
75-09-2	Dichloromethane	41	PS
120-36-5	Dichlorprop (2,4-DP)	12	
62-73-7	Dichlorvos	24	PS
15307-86-5	Diclofenac	12	1st Watch list. Not suggested for 2nd Watch list
115-32-2	Dicofol	24	PHS
83164-33-4	Diflufenican	6	
60-51-5	Dimethoate	18	
105-67-9	2,4-Dimethyl phenol	6	
576-26-1	2,6-Dimethyl phenol	6	
108-68-9	3,5-Dimethyl phenol	6	
Not applicable	Dioxins and dioxin-like compounds (7 PCDDs + 10 PCDFs + 12 PCB-DLs)	65	PHS
Not applicable	Dioxin-like polychlorinated biphenyls (12 PCB-DLs: 77,81,105,114,118,123,126,156,157,167,169,189)	12	
32598-13-3	PCB 77 (3,3',4,4'-tetrachlorobiphenyl)	0	PHS
70362-50-4	PCB 81 (3,4,4',5-tetrachlorobiphenyl)	0	PHS
32598-14-4	PCB 105 (2,3,3',4,4'-pentachlorobiphenyl)	18	PHS
74472-37-0	PCB 114 (2,3,4,4',5-pentachlorobiphenyl)	0	PHS
31508-00-6	PCB 118 (2,3',4,4',5-pentachlorobiphenyl)	53	PHS
65510-44-3	PCB 123 (1,2,3-trichloro-5-(2,4-dichlorophenyl)benzene)	0	PHS
57465-28-8	PCB 126 (3,3',4,4',5-pentachlorobiphenyl)	0	PHS
38380-08-4	PCB 156 (2,3,3',4,4',5-hexachlorobiphenyl)	12	PHS
69782-90-7	PCB 157 (2,3,3',4,4',5'-hexachlorobiphenyl)	0	PHS
52663-72-6	PCB 167 (1,2,3-trichloro-5-(2,4,5-trichlorophenyl)benzene)	0	PHS
32774-16-6	PCB 169 (3,3',4,4',5,5'-hexachlorobiphenyl)	6	PHS
39635-31-9	PCB 189 (1,2,3,4-tetrachloro-5-(3,4,5-trichlorophenyl)benzene)	0	PHS

CAS number	Substance name	% MS reporting	WFD
Not applicable	Polychlorinated dibenzodioxins (PCDD)	0	
1746-01-6	TCDD (2,3,7,8-tetrachlorodibenzo-p-dioxin)	0	
40321-76-4	1,2,3,7,8-P5CDD	0	
39227-28-6	1,2,3,4,7,8- H6CDD	0	
57653-85-7	1,2,3,6,7,8-H6CDD	0	
19408-74-3	1,2,3,7,8,9-H6CDD	0	
35822-46-9	1,2,3,4,6,7,8-H7CDD	0	
3268-87-9	1,2,3,4,6,7,8,9-O8CDD	0	
Not applicable	Polychlorinated dibenzofurans (10 PCDFs)	0	
51207-31-9	2,3,7,8-T4CDF	0	
57117-41-6	1,2,3,7,8-P5CDF	0	
57117-31-4	2,3,4,7,8-P5CDF	0	
70648-26-9	1,2,3,4,7,8-H6CDF	0	
57117-44-9	1,2,3,6,7,8-H6CDF	0	
72918-21-9	1,2,3,7,8,9-H6CDF	0	
60851-34-5	2,3,4,6,7,8-H6CDF	0	
67562-39-4	1,2,3,4,6,7,8-H7CDF	0	
55673-89-7	1,2,3,4,7,8,9-H7CDF	0	
39001-02-0	1,2,3,4,6,7,8,9-O8CDF	0	
Not applicable	Total dioxins and furans (PCDD + PCDF)	0	
298-04-4	Disulfoton	18	
128-37-0	2,6-Ditert-butyl-4-methylphenol	6	1st Watch list. Not suggested for 2nd Watch list
330-54-1	Diuron	35	PS
115-29-7	Endosulfan	35	PS
1031-07-8	Endosulfan sulfate	12	
133855-98-8	Epoxiconazole	6	
53-16-7	Estrone (E1)	6	1st Watch list. Suggested for 2nd Watch list
13194-48-4	Ethoprophos	6	
100-41-4	Ethylbenzene	18	
5466-77-3	2-Ethylhexyl 4-methoxycinnamate	6	1st Watch list. Not suggested for 2nd Watch list
38260-54-7	Etrifos	6	
122-14-5	Fenitrothion	18	
55-38-9	Fenthion	18	
16984-48-8	Fluoride	12	
50-00-0	Formaldehyde	6	
Not applicable	Heptachlor and heptachlor epoxide	53	PHS
76-44-8	Heptachlor	24	PHS
1024-57-3	Heptachlor epoxide	18	PHS
Not applicable	Hexabromocyclododecanes (HBCDD)	53	PHS
25637-99-4	1,3,5,7,9,11-Hexabromocyclododecane	0	
3194-55-6	1,2,5,6,9,10- Hexabromocyclododecane	0	
134237-50-6	alpha-Hexabromocyclododecane	6	
134237-51-7	beta-Hexabromocyclododecane	6	
134237-52-8	gamma-Hexabromocyclododecane	6	
118-74-1	Hexachlorobenzene	76	PHS
87-68-3	Hexachlorobutadiene	65	PHS
608-73-1	Hexachlorocyclohexane	47	PHS

CAS number	Substance name	% MS reporting	WFD
319-84-6	Alpha-HCH	12	
319-85-7	Beta-HCH	0	
58-89-9	Gamma-HCH (Lindane)	29	
319-86-8	Delta-HCH	0	
6108-10-7	Epsilon-HCH	6	
67-72-1	Hexachloroethane	6	
51235-04-2	Hexazinone	6	
7439-89-6	Iron and its compounds	6	
34123-59-6	Isoproturon	35	PS
7439-92-1	Lead and its compounds	100	PS
330-55-2	Linuron	18	
Not applicable	Total macrolide antibiotics (erythromycin + clarithromycin + azithromycin)	6	1st Watch list. Suggested for 2nd Watch list
83905-01-5	Azithromycin	6	1st Watch list. Suggested for 2nd Watch list
81103-11-9	Clarithromycin	6	1st Watch list. Suggested for 2nd Watch list
114-07-8	Erythromycin	6	1st Watch list. Suggested for 2nd Watch list
121-75-5	Malathion	18	
7439-96-5	Manganese and its compounds	12	
7085-19-0	Mecoprop	18	
7439-97-6	Mercury and its compounds	94	PHS
41394-05-2	Metamitron	6	
67129-08-2	Metazachlor	6	
18691-97-9	Methabenzthiazuron	6	
10265-92-6	Methamidophos	18	
94-74-6	MCPA	18	
51218-45-2	Metolachlor	12	
21087-64-9	Metribuzin	12	
7786-34-7	Mevinphos	18	
7439-98-7	Molybdenum and its compounds	6	
1746-81-2	Monolinuron	18	
Not applicable	Total neonicotinoid insecticides (imidacloprid+thiacloprid+thiamethoxam+clothianidin+acetamiprid)	6	1st Watch list. Suggested for 2nd Watch list
135410-20-7	Acetamiprid	12	1st Watch list. Suggested for 2nd Watch list
210880-92-5	Clothianidin	6	1st Watch list. Suggested for 2nd Watch list
105827-78-9/ 138261-41-3	Imidacloprid	6	1st Watch list. Suggested for 2nd Watch list
111988-49-9	Thiacloprid	6	1st Watch list. Suggested for 2nd Watch list
153719-23-4	Thiamethoxam	6	1st Watch list. Suggested for 2nd Watch list
7440-02-0	Nickel and its compounds	71	PS
25154-52-3	Nonylphenol	18	PHS
104-40-5	4-Nonylphenol	24	PHS
84852-15-3	4- Nonylphenol, branched	47	PHS
140-66-9	Octylphenol (4-(1,1',3,3'-tetramethylbutyl)-phenol)	41	PS
1113-02-6	Omethoate	18	
301-12-2	Oxydemeton-methyl	12	
56-38-2	Parathion	18	

CAS number	Substance name	% MS reporting	WFD
298-00-0	Parathion-methyl	12	
608-93-5	Pentachlorobenzene	53	PHS
87-86-5	Pentachlorophenol	35	PS
14797-73-0	Perchlorate	6	
335-67-1	PFOA	6	
45187-15-3	Perfluorobutanesulfonate	6	
375-72-4	1,1,2,2,3,3,4,4,4-nonafluorobutane-1-sulphonyl fluoride	6	
375-22-4	Perfluorobutyric acid	12	
1763-23-1	Perfluorooctane sulfonic acid (PFOS) and its derivatives	47	PHS
Not applicable	Petroleum hydrocarbons	29	
108-95-2	Phenol	18	
Not applicable	Phenol index	6	
85-68-7	Butyl benzyl phthalate (BBP)	6	
117-82-8	Bis(2-methoxyethyl) phthalate	6	
84-74-2	Dibutylphthalate	12	
117-81-7	Di(2-ethylhexyl)phthalate (DEHP)	59	PHS
84-66-2	Di-ethyl phthalate	18	
84-75-3	Di-hexyl phthalate	6	
84-69-5	Di-iso-butyl phthalate	6	
26761-40-0	Diisodecyl phthalate	6	
28553-12-0	Diisononyl phthalate	6	
27554-26-3	Diisooctyl phthalate	6	
605-50-5	Diisopentyl phthalate	6	
131-11-3	Dimethyl phthalate	6	
117-84-0	Di-n-octyl phthalate	6	
131-18-0	Dipentyl phthalate	6	
14816-18-3	Phoxim	6	
23103-98-2	Pirimicarb	12	
Not applicable	Total PAHs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene)	41	PHS
Not applicable	ΣPAH9: anthracene; benzo[a]anthracene; benzo[ghi]perylene; benzo[a]pyrene; chrysene; fluoranthene; indeno[1,2,3-cd]pyrene; pyrene; phenanthrene	41	
83-32-9	Acenaphthene	29	
208-96-8	Acenaphthylene	29	
120-12-7	Anthracene	100	PHS
56-55-3	Benzo(a)anthracene	65	
50-32-8	Benzo(a)pyrene	100	PHS
192-97-2	Benzo[e]pyrene	24	
205-99-2	Benzo(b)fluoranthene	71	PHS
191-24-2	Benzo(g,h,i)perylene	88	PHS
207-08-9	Benzo(k)fluoranthene	71	PHS
218-01-9	Chrysene	59	
3351-28-8	Chrysene, 1-methyl-	6	

CAS number	Substance name	% MS reporting	WFD
1705-85-7	6-Methylchrysene	6	
53-70-3	Dibenzo(a,h)anthracene	35	
132-65-0	Dibenzothiophene	12	
206-44-0	Fluoranthene	100	PS
86-73-7	Fluorene	29	
193-39-5	Indeno(1,2,3,-cd)pyrene	82	PHS
91-20-3	Naphthalene	76	PS
85-01-8	Phenanthrene	65	
832-64-4	4-Methylphenanthrene	6	
198-55-0	Perylene	18	
129-00-0	Pyrene	65	
5315-79-7	1-Hydroxypyrene	6	
217-59-4	Triphenylene	6	
Not applicable	PAH metabolites in fish bile	18	
Not applicable	Polychlorinated biphenyls (7 PCB: 28,52,101,118,138,153,180)	47	
Not applicable	Non-dioxin like PCB (sum of 6 PCB: 28, 52, 101, 138, 153 and 180)	35	
7012-37-5	PCB 28 (2,4,4'-trichlorobiphenyl)	53	
35693-99-3	PCB 52 (2,2',5,5'-tetrachlorobiphenyl)	53	
38380-01-7	PCB 99 (2,2',4,4',5-pentachlorobiphenyl)	6	
37680-73-2	PCB 101 (2,2',4,5,5'-pentachlorobiphenyl)	53	
38380-03-9	PCB 110 (2,3,3',4',6-pentachlorobiphenyl)	6	
35065-28-2	PCB 138 (2,2',3,4,4',5'-hexachlorobiphenyl)	53	
38380-04-0	PCB 149 (2,2',3,4',5',6-hexachlorobiphenyl)	6	
52663-63-5	PCB 151 (2,2',3,5,5',6-hexachlorobiphenyl)	6	
35065-27-1	PCB 153 (2,2',4,4',5,5'-hexachlorobiphenyl)	53	
35065-30-6	PCB 170 (1,2,3,4-tetrachloro-5-(2,3,4-trichlorophenyl)benzene)	18	
35065-29-3	PCB 180 (2,2',3,4,4',5,5'-heptachlorobiphenyl)	53	
52663-69-1	PCB 183 (2,2',3,4,4',5',6-heptachlorobiphenyl)	12	
52663-68-0	PCB 187 (2,2',3,4',5,5',6-heptachlorobiphenyl)	6	
35694-08-7	PCB 194 (1,2,3,4-tetrachloro-5-(2,3,4,5-tetrachlorophenyl)benzene)	12	
137641-05-5	Picolinafen	6	
7287-19-6	Prometryn	12	
709-98-8	Propanil	12	
60207-90-1	Propiconazole	12	
124495-18-7	Quinoxifen	18	PHS
108-46-3	Resorcinol	6	
7782-49-2	Selenium and its compounds	18	
7440-22-4	Silver	18	
122-34-9	Simazine	35	PS
100-42-5	Styrene	6	
93-76-5	2,4,5-T	12	
107534-96-3	Tebuconazole	6	

CAS number	Substance name	% MS reporting	WFD
5915-41-3	Terbutylazine	6	
886-50-0	Terbutryn	35	PS
95-94-3	1,2,4,5-Tetrachlorobenzene	6	
127-18-4	Tetrachloroethylene	18	Other pollutants
7440-28-0	Thallium	12	
1002-53-5	Dibutyltin	6	
14488-53-0	Dibutyltin ion	29	
15231-44-4	Diocetyl tin	6	
78763-54-9	Monobutyltin ion	24	
Not applicable	Tributyltin compounds	88	PHS
36643-28-4	Tributyltin-cation	65	PHS
Not applicable	Triphenyltin and compounds	24	
1461-25-2	Tetrabutyltin	12	
7440-32-6	Titanium	6	
108-88-3	Toluene	29	
2303-17-5	Tri-allate	6	1st Watch list. Not suggested for 2nd Watch list
24017-47-8	Triazophos	18	
126-73-8	Tri-n-butyl phosphate	6	
52-68-6	Trichlorfon	12	
12002-48-1	Trichlorobenzenes (all isomers)	35	PS
87-61-6	1,2,3-Trichlorobenzene	6	
120-82-1	1,2,4-Trichlorobenzene	6	
108-70-3	1,3,5-Trichlorobenzene	6	
71-55-6	1,1,1-Trichloroethane	18	
79-00-5	1,1,2-Trichloroethane	12	
79-01-6	Trichloroethylene	29	Other pollutants
67-66-3	Trichloromethane	41	PS
1582-09-8	Trifluralin	29	PHS
7440-62-2	Vanadium and its compounds	12	
1330-20-7	Xylene	24	
108-38-3	m-Xylene	6	
95-47-6	o-Xylene	12	
106-42-3	p-Xylene	6	
Not applicable	Meta xylene + para xylene	12	
7440-66-6	Zinc and its compounds	59	
	Cesium-137	24	
	Potassium-40	6	

Table 2. % MS using WFD PS and certain other pollutants for MSFD D8 reporting in different marine regions

Mediterranean Sea (7 MS: CY, EL, ES, FR, HR, IT, MT); Black Sea (2 MS: BG, RO); Baltic Sea (5 MS: DE, EE, FI, PL, SE); North-East Atlantic (8 MS: DE, ES, FI, FR, IE, NL, SE, UK).

CAS number	Substance name	Mediterranean Sea	Black Sea	Baltic Sea	North-East Atlantic
7440-43-9	Cadmium and its compounds	100	100	100	100
7439-92-1	Lead and its compounds	100	100	100	100
50-32-8	Benzo(a)pyrene	100	100	100	100
120-12-7	Anthracene	100	100	100	100
206-44-0	Fluoranthene	100	100	100	100
7439-97-6	Mercury and its compounds	100	50	100	100
191-24-2	Benzo(g,h,i)perylene	86	100	80	88
Not applicable	Tributyltin compounds (Tributyltin-cation)	100	50	100	100
193-39-5	Indeno(1,2,3-cd)pyrene	71	100	80	88
Not applicable	Brominated diphenylethers (congener numbers 28, 47, 99, 100, 153 and 154)	86	50	100	75
118-74-1	Hexachlorobenzene	86	100	80	63
91-20-3	Naphthalene	86	100	80	63
7440-02-0	Nickel and its compounds	71	100	80	50
205-99-2	Benzo(b)fluoranthene	86	100	80	88
207-08-9	Benzo(k)fluoranthene	86	100	60	50
Not applicable	Dioxins and dioxin-like compounds (7 PCDDs + 10 PCDFs + 12 PCB-DLs)	57	50	100	75
87-68-3	Hexachlorobutadiene	71	50	80	50
117-81-7	Di(2-ethylhexyl)phthalate (DEHP)	71	50	60	38
Not applicable	Hexabromocyclododecanes (HBCDD)	43	50	80	50
608-93-5	Pentachlorobenzene	57	50	60	25
1912-24-9	Atrazine	43	50	60	38
71-43-2	Benzene	57	50	40	25
85535-84-8	Chloroalkanes C10-13	71	0	60	38
50-29-3	DDT, p,p'	43	100	60	25
608-73-1	Hexachlorocyclohexane	57	0	80	38
25154-52-3	Nonylphenols (4-Nonylphenol)	57	0	60	50
1763-23-1	Perfluorooctane sulfonic acid (PFOS) and its derivatives	43	50	80	38
2921-88-2	Chlorpyrifos	57	0	60	38
Not applicable	Total DDT (DDT, p,p' + DDT, o,p' + DDE, p,p' + DDD, p,p')	43	50	60	25
107-06-2	1,2-Dichloroethane	43	0	60	25
75-09-2	Dichloromethane	43	0	60	25
Not applicable	Heptachlor and heptachlor epoxide	71	50	60	25
140-66-9	Octylphenol (4-(1,1',3,3'-tetramethylbutyl)-phenol)	43	50	60	25
Not applicable	Total PAHs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene)	71	0	40	25
67-66-3	Trichloromethane	43	0	60	25
15972-60-8	Alachlor	43	0	60	25
470-90-6	Chlorfenvinphos	43	0	60	25

CAS number	Substance name	Mediterranean Sea	Black Sea	Baltic Sea	North-East Atlantic
330-54-1	Diuron	29	0	60	38
115-29-7	Endosulfan	43	0	60	25
34123-59-6	Isoproturon	43	0	60	25
87-86-5	Pentachlorophenol	43	0	60	25
122-34-9	Simazine	43	0	40	38
886-50-0	Terbutryn	57	50	20	13
12002-48-1	Trichlorobenzenes (all isomers)	29	0	60	25
Not applicable	Total cyclodiene pesticides (aldrin + dieldrin + endrin + isodrin)	29	0	60	25
79-01-6	Trichloroethylene	29	0	40	13
1582-09-8	Trifluralin	29	0	60	13
56-23-5	Carbon tetrachloride	29	0	40	0
28159-98-0	Cybutryne	43	0	20	13
62-73-7	Dichlorvos	29	0	40	13
115-32-2	Dicofol	29	50	20	0
74070-46-5	Aclonifen	29	0	20	13
52315-07-8	Cypermethrin	29	0	20	13
124495-18-7	Quinoxifen	43	0	0	13
127-18-4	Tetrachloroethylene	14	0	20	13
42576-02-3	Bifenox	14	0	20	0

Table 3. RBSP causing failure and their consideration for MSFD D8 reporting

(based on the information provided by 14 MS)

X: RBSP causing failure that are not considered by the corresponding MS for MSFD D8 reporting

X: RBSP causing failure that are considered by the corresponding MS for MSFD D8 reporting

CAS number	Substance name	BG	CY	DE	EE	ES	FR	HR	IT	MT	NL	PL	RO	SE	UK
<i>Included in the list of contaminants for MSFD D8 reporting (table 1)</i>															
<i>WFD substances</i>															
74070-46-5	Aclonifen								x						
191-24-2	Benzo(g,h,i)perylene			x					x						
7440-43-9	Cadmium and its compounds					x									
470-90-6	Chlorfenvinphos					x									
52315-07-8	Cypermethrin														x
62-73-7	Dichlorvos			x					x						
Not applicable	Dioxins and dioxin-like compounds (7 PCDDs + 10 PCDFs + 12 PCB-DLs)								x						
115-29-7	Endosulfan					x									
76-44-8	Heptachlor			x											
1024-57-3	Heptachlor epoxide			x											
608-73-1	Hexachlorocyclohexane					x									
193-39-5	Indeno(1,2,3-cd)pyrene								x						
7439-92-1	Lead and its compounds					x									
7440-02-0	Nickel and its compounds					x									
84852-15-3	Nonylphenol, branched					x									
140-66-9	Octylphenol (4-(1,1',3,3'-tetramethylbutyl)-phenol)					x									
122-34-9	Simazine					x									
Not applicable	Total cyclodiene pesticides (aldrin + dieldrin + endrin + isodrin)					x									
Not applicable	Total PAHs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene)								x						
67-66-3	Trichloromethane					x									
<i>No WFD substances</i>															
57-63-6	17alpha-ethinylestradiol (EE2)													x	
7429-90-5	Aluminium and its compounds	x										x			
7440-38-2	Arsenic and its compounds	x		x	x	x	x	x	x		x			x	x
2642-71-9	Azinphos-ethyl								x		x				
86-50-0	Azinphos-methyl								x		x				
7440-39-3	Barium			x	x						x				
25057-89-0	Bentazone			x					x						
56-55-3	Benzo(a)anthracene										x				
7440-42-8	Boron		x								x	x			
1698-60-8	Chloridazon			x					x						
108-90-7	Chlorobenzene			x					x						
15545-48-9	Chlortoluron			x											
7440-47-3	Chromium and its compounds			x		x	x		x			x		x	x
218-01-9	Chrysene										x				
7440-48-4	Cobalt and its compounds										x				

CAS number	Substance name	BG	CY	DE	EE	ES	FR	HR	IT	MT	NL	PL	RO	SE	UK
7440-50-8	Copper and its compounds	x		x	x	x	x	x			x			x	x
333-41-5	Diazinon			x					x						x
95-50-1	1,2-dichlorobenzene			x											
94-75-7	2,4-dichlorophenoxyacetic acid, 2-4 D			x					x						x
120-36-5	Dichlorprop (2,4-DP)			x											
83164-33-4	Diflufenican			x										x	
60-51-5	Dimethoate			x											
133855-98-8	Epoxiconazole			x											
55-38-9	Fenthion								x						
16984-48-8	Fluoride					x		x							
50-00-0	Formaldehyde											x			
57-12-5	Free cyanide	x		x		x									x
58-89-9	Gamma-HCH (Lindane)								x						
138261-41-3	Imidacloprid								x		x				
7439-89-6	Iron and its compounds	x													x
330-55-2	Linuron			x							x				
121-75-5	Malathion			x					x						
7439-96-5	Manganese and its compounds	x													
94-74-6	MCPA			x			x		x					x	
7085-19-0	Mecoprop			x											
41394-05-2	Metamitron								x						
67129-08-2	Metazachlor			x							x				
51218-45-2	Metolachlor			x		x			x		x				
21087-64-9	Metribuzin			x					x					x	
7786-34-7	Mevinphos			x							x				
56-38-2	Parathion			x					x						
298-00-0	Parathion-methyl			x					x						
37680-73-2	PCB 101 (2,2',4,5,5'-pentachlorobiphenyl)			x											
31508-00-6	PCB 118 (2,3',4,4',5'-pentachlorobiphenyl)			x											
35065-28-2	PCB 138 (2,2',3,4,4',5'-hexachlorobiphenyl)			x											
35065-27-1	PCB 153 (2,2',4,4',5,5'-hexachlorobiphenyl)			x											
35065-29-3	PCB 180 (2,2',3,4,4',5,5'-heptachlorobiphenyl)			x											
7012-37-5	PCB 28 (2,4,4'-trichlorobiphenyl)			x											
35693-99-3	PCB 52 (2,2',5,5'-tetrachlorobiphenyl)			x											
85-01-8	Phenanthrene			x							x				
108-95-2	Phenol			x								x			x
23103-98-2	Pirimicarb			x					x						
7287-19-6	Prometryn			x											
60207-90-1	Propiconazole			x											
7782-49-2	Selenium and its compounds			x		x					x				
7440-22-4	Silver			x							x				
93-76-5	2,4,5-T			x											
5915-41-3	Terbutylazine			x		x			x		x				

CAS number	Substance name	BG	CY	DE	EE	ES	FR	HR	IT	MT	NL	PL	RO	SE	UK
7440-28-0	Thallium			x							x	x			
153719-23-4	Thiamethoxam								x						
108-88-3	Toluene								x						
88-06-2	2,4,6-trichlorophenol			x											
Not applicable	Triphenyltin and compounds			x								x			
7440-62-2	Vanadium and its compounds										x				
1330-20-7	Xylene								x						
7440-66-6	Zinc and its compounds	x		x	x	x	x	x		x	x	x		x	x
<i>Not included in the list of contaminants for MSFD D8 reporting</i>															
14798-03-9	Ammonium										x				x
59473-04-0	Adsorbable organic halides (AOX)							x							
131860-33-8	Azoxystrobin								x						
188425-85-6	Boscalid								x						
10605-21-7	Carbendazim										x				
143-50-0	Chlordecone (Kepone)						x								
75-01-4	Chloroethene (vinylchloride)			x											
16065-83-1	Chromium (III)	x													
1333-82-0	Chromium trioxide (CrO3)	x				x									
156-59-2	cis-1,2-dichloroethene			x											
6190-65-4	Desethylatrazine								x						
30125-63-4	Desethylterbutylazine								x						
106-93-4	1,2-dibromoethane			x											
2008-58-4	2,6-dichlorobenzamide								x						
142459-58-3	Flufenacet								x						
7782-41-4	Fluorine					x						x			
1071-83-6	Glyphosate								x						
74-90-8	Hydrogen cyanide					x									
141112-29-0	Isoxaflutole								x						
57837-19-1	1-metalaxyl								x						
19666-30-9	Oxadiazon								x						
40487-42	Pendimethalin								x						
52645-53-1	Permethrin-cis+trans														x
64743-03-9	Phenols											x	x		
14265-44-2	Phosphate					x			x						
29232-93-7	Pirimiphos-methyl										x				
1336-36-3	Polychlorinated biphenyls			x									x		
114-26-1	Propoxur										x				
23950-58-5	Propyzamide								x						
122931-48-0	Rimsulfuron								x						
99105-77-8	Sulcotrione								x						
79-34-5	1,1,2,2-tetrachloroethane			x											
7440-31-5	Tin and its compounds										x				
Not applicable	Total cyanide					x									
3380-34-5	Triclosan														x
7440-61-1	Uranium			x							x				

Table 4. Consideration for MSFD reporting of RSC substances in the different marine regions

4.1. Barcelona Convention (based on the information from 7 MS: CY, EL, ES, FR, HR, IT, MT).

LBS protocol: Substances of concern under the protocol for the protection of the Mediterranean Sea from Land-Based Sources and Activities; MEDPOL: Chemicals monitored under MEDPOL monitoring programme.

CAS number	Substance name		% MS reporting
57-74-9	Chlordane	LBS protocol	14
108-90-7	Chlorobenzene	LBS protocol	14
7440-47-3	Chromium and its compounds	LBS protocol	57
7440-50-8	Copper and its compounds	LBS protocol	71
309-00-2	Aldrin	LBS protocol MEDPOL	29
60-57-1	Dieldrin	LBS protocol MEDPOL	14
72-20-8	Endrin	LBS protocol	0
Not applicable	Dioxin-like polychlorinated biphenyls (12 PCB-DLs: 77,81,105,114,118,123,126,156,157,167,169,189)	LBS protocol	29
76-44-8	Heptachlor	LBS protocol	29
319-84-6	Alpha-HCH	MEDPOL	29
58-89-9	Gamma-HCH (Lindane)	LBS protocol MEDPOL	43
7440-66-6	Zinc and its compounds	LBS protocol	71

4.2. Black Sea Commission (based on the information from 2 MS: BG, RO).

BSIMAP: Substances covered by the Black Sea Integrated Monitoring and Assessment Programme.

CAS number	Substance name		% MS reporting
7440-47-3	Chromium and its compounds	BSIMAP optional	50
7440-48-4	Cobalt and its compounds	BSIMAP optional	0
7440-50-8	Copper and its compounds	BSIMAP mandatory	100
58-89-9	Gamma-HCH (Lindane)	BSIMAP optional	50
Not applicable	Petroleum hydrocarbons	BSIMAP mandatory	100
108-95-2	Phenol	BSIMAP optional	0
7440-66-6	Zinc and its compounds	BSIMAP optional	50
	Cesium-137	BSIMAP optional	0

4.3. HELCOM (based on the information from 5 MS: DE, EE, FI, PL, SE).

Potential concern: List of substances of potential concern specified in HELCOM Recommendation 19/5 and annex I; Priority Hazardous: HELCOM List of Priority Hazardous Substances; Core indicator: Indicators for hazardous substances of specific concern to the Baltic Sea.

CAS number	Substance name		% MS reporting
57-74-9	Chlordane	Potential concern	20
309-00-2	Aldrin	Potential concern	0
60-57-1	Dieldrin	Potential concern	0
72-20-8	Endrin	Potential concern	0
465-73-6	Isodrin	Potential concern	0
31508-00-6	PCB 118 (2,3',4,4',5-pentachlorobiphenyl)	Core indicator PCBs, dioxin and furans	40
76-44-8	Heptachlor	Potential concern	20
319-85-7	Beta-HCH	Potential concern	0
58-89-9	Gamma-HCH (Lindane)	Potential concern	0
335-67-1	Pentadecafluorooctanoic acid (PFOA)	Priority hazardous	20
84-74-2	Dibutylphthalate	Potential concern	20

5315-79-7	1-Hydroxypyrene	Core indicator	20
Not applicable	Non-dioxin like PCB (sum of 6 PCB: 28, 52, 101, 138, 153 and 180)	Core indicator non-dioxin PCBs	60
7782-49-2	Selenium and its compounds	Potential concern	40
93-76-5	2,4,5-T	Potential concern	0
14488-53-0	Dibutyltin ion	Core indicator	60
78763-54-9	Monobutyltin ion	Core indicator	40
Not applicable	Triphenyltin and compounds	Priority hazardous Core indicator	60
	Cesium-137	Core indicator	80

4.4. OSPAR (based on the information from 8 MS: DE, ES, FI, FR, IE, NL, SE, UK).

Priority Action: Substances which should be given priority; Possible concern: OSPAR List of Substances of Possible Concern; OSPAR CEMP: Marine contaminants in the OSPAR's Coordinated Environmental Monitoring Programme; Common indicator: Set of common indicators to contribute to the Intermediate Assessment 2017 and may be used by Contracting Parties to support their assessment and reporting requirements under the MSFD.

CAS number	Substance name		% MS reporting
Not applicable	Brominated diphenylethers (congener numbers 28, 47, 66, 85, 99, 100, 153, 154, and 183)	Common indicator OSPAR CEMP Priority action	38
57-74-9	Chlordane	Possible concern	13
42074-68-0	1-Chloro-2-(chlorodiphenylmethyl)benzene	Possible concern	0
95-95-4	2,4,5-Trichlorophenol	Possible concern	0
309-00-2	Aldrin	Possible concern	13
60-57-1	Dieldrin	Possible concern	13
72-20-8	Endrin	Possible concern	0
465-73-6	Isodrin	Possible concern	0
53-19-0	o,p'-DDD	Possible concern	0
72-54-8	p,p'-DDD	Possible concern	13
2	o,p'-DDE	Possible concern	0
72-55-9	p,p'-DDE	Possible concern	13
789-02-6	DDT, o,p'	Possible concern	0
95-76-1	3,4-Dichloroaniline	Possible concern	0
41999-84-2	1,4-Dichloro-2,5-bis(dichloromethyl)benzene	Possible concern	0
31508-00-6	PCB 118 (2,3',4,4',5-pentachlorobiphenyl)	Common indicator CEMP PCB	75
1746-01-6	TCDD (2,3,7,8-tetrachlorodibenzo-p-dioxin)	Possible concern	0
76-44-8	Heptachlor	Possible concern	13
1024-57-3	Heptachlor epoxide	Possible concern	13
58-89-9	Gamma-HCH (Lindane)	Priority action	38
67-72-1	Hexachloroethane	Possible concern	13
375-72-4	1,1,2,2,3,3,4,4,4-nonafluorobutane-1-sulphonyl fluoride	Possible concern	0
85-68-7	Butyl benzyl phthalate (BBP)	Possible concern	0
84-74-2	Dibutylphthalate	Priority action	0
84-69-5	Di-iso-butyl phthalate	Possible concern	0
27554-26-3	Diisooctyl phthalate	Possible concern	0
117-84-0	Di-n-octyl phthalate	Possible concern	0
Not applicable	ΣPAH9: anthracene; benzo[a]anthracene; benzo[ghi]perylene; benzo[a]pyrene; chrysene; fluoranthene; indeno[1,2,3-cd]pyrene; pyrene; phenanthrene	Common indicator OSPAR CEMP	63
83-32-9	Acenaphthene	Possible concern	13
56-55-3	Benz(a)anthracene	Common indicator OSPAR CEMP	88

192-97-2	Benzo[e]pyrene	Possible concern	25
218-01-9	Chrysene	Common indicator OSPAR CEMP	75
3351-28-8	Chrysene, 1-methyl-	Possible concern	0
1705-85-7	6-Methylchrysene	Possible concern	0
53-70-3	Dibenzo(a,h)anthracene	Possible concern	25
132-65-0	Dibenzothiophene	Possible concern	13
85-01-8	Phenanthrene	Common indicator OSPAR CEMP	88
198-55-0	Perylene	Possible concern	13
129-00-0	Pyrene	Common indicator OSPAR CEMP	88
217-59-4	Triphenylene	Possible concern	13
Not applicable	PAH metabolites in fish bile	Common indicator	25
Not applicable	Polychlorinated biphenyls (7 PCB: 28,52,101,118,138,153,180)	Common indicator OSPAR CEMP PCB	63
7012-37-5	PCB 28 (2,4,4'-trichlorobiphenyl)	Common indicator OSPAR CEMP	75
35693-99-3	PCB 52 (2,2',5,5'-tetrachlorobiphenyl)	Common indicator OSPAR CEMP	75
37680-73-2	PCB 101 (2,2',4,5,5'-pentachlorobiphenyl)	Common indicator OSPAR CEMP	75
35065-28-2	PCB 138 (2,2',3,4,4',5'-hexachlorobiphenyl)	Common indicator OSPAR CEMP	75
35065-27-1	PCB 153 (2,2',4,4',5,5'-hexachlorobiphenyl)	Common indicator OSPAR CEMP	75
35065-29-3	PCB 180 (2,2',3,4,4',5,5'-heptachlorobiphenyl)	Common indicator OSPAR CEMP	75
14488-53-0	Dibutyltin ion	Priority action	38
78763-54-9	Monobutyltin ion	Priority action	25
Not applicable	Triphenyltin and compounds	Priority action	25
1461-25-2	Tetrabutyltin	Priority action	13
87-61-6	1,2,3-Trichlorobenzene	Priority action	0
120-82-1	1,2,4-Trichlorobenzene	Priority action	0
108-70-3	1,3,5-Trichlorobenzene	Priority action	0

Table 5. % MS reporting on other contaminants in different marine regions

Mediterranean Sea (7 MS: CY, EL, ES, FR, HR, IT, MT); Black Sea (2 MS: BG, RO); Baltic Sea (5 MS: DE, EE, FI, PL, SE); North-East Atlantic (8 MS: DE, ES, FI, FR, IE, NL, SE, UK).

CAS number	Substance name	Mediterranean Sea	Black Sea	Baltic Sea	North-East Atlantic
208-96-8	Acenaphthylene	29	100	20	13
834-12-8	Ametryn	0	0	20	13
95-85-2	2-amino-4-chlorophenol	0	0	20	0
62-53-3	Aniline	0	0	20	13
7440-36-0	Antimony	14	0	20	0
7440-41-7	Beryllium	14	0	20	0
117-82-8	Bis(2-methoxyethyl) phthalate	0	50	20	0
80-05-7	Bisphenol A	0	50	0	0
314-40-9	Bromacil	0	0	20	13
1689-84-5	Bromoxynil	0	0	20	13
298-46-4	Carbamazepin	14	0	0	0
106-47-8	4-chloroaniline	29	0	0	0
95-57-8	2-chlorophenol	14	0	20	0
108-43-0	3-chlorophenol	14	0	20	0
106-48-9	4-chlorophenol	14	0	20	0
100-44-7	α -chlorotoluene	14	0	0	0
95-49-8	2-chlorotoluene	14	0	0	0
18540-29-9	Chromium VI	14	50	20	13
1702-17-6	Clopyralid	0	50	20	0
56-72-4	Coumaphos	14	50	20	13
15831-10-4	m-/p-Cresol	0	50	20	0
8065-48-3	Demeton	29	50	20	13
919-86-8	Demeton-S-methyl	14	50	20	13
17040-19-6	Demeton-S-methylsulfon	14	50	20	13
1918-00-9	Dicamba	14	50	0	0
1194-65-6	Dichlobenil	14	50	0	0
541-73-1	1,3-dichlorobenzene	29	50	20	13
106-46-7	1,4-dichlorobenzene	29	50	20	13
540-59-0	1,2-dichloroethene	14	50	20	13
120-83-2	2,4-dichlorophenol	14	0	20	0
84-66-2	Di-ethyl phthalate	14	50	20	0
84-75-3	Dihexyl phthalate	0	0	20	0
26761-40-0	Diisodecyl phthalate	0	0	20	0
28553-12-0	Diisononyl phthalate	0	0	20	0
605-50-5	Diisopentyl phthalate	0	0	20	0
105-67-9	2,4-dimethyl phenol	0	50	20	0
576-26-1	2,6-dimethyl phenol	0	50	20	0
108-68-9	3,5-dimethyl phenol	0	50	20	0
131-11-3	Dimethyl phthalate	0	0	20	0
15231-44-4	Diocyltin (DOT)	0	0	20	0
131-18-0	Dipentyl phthalate	0	0	20	0
298-04-4	Disulfoton	29	50	20	13
1031-07-8	Endosulfan sulfate	14	50	20	0
13194-48-4	Ethoprophos	14	50	0	0
100-41-4	Ethylbenzene	14	50	20	13
38260-54-7	Etrimfos	0	50	20	13
122-14-5	Fenitrothion	29	50	20	13

CAS number	Substance name	Mediterranean Sea	Black Sea	Baltic Sea	North-East Atlantic
86-73-7	Fluorene	29	100	20	13
51235-04-2	Hexazinone	0	50	20	13
18691-97-9	Methabenzthiazuron	0	50	20	13
10265-92-6	Methamidophos	29	50	20	13
832-64-4	4-methylphenanthrene	14	0	0	0
108-39-4	3-methylphenol	0	50	20	0
106-44-5	4-methyl-phenol	0	50	20	0
7439-98-7	Molybdenum and its compounds	0	50	20	0
1746-81-2	Monolinuron	29	50	20	13
1113-02-6	Omethoate	29	50	20	13
301-12-2	Oxydemeton-methyl	29	50	0	0
45187-15-3	Perfluorobutanesulfonate	0	50	20	0
375-22-4	Perfluorobutyric acid	0	50	40	13
Not applicable	Phenol index	0	50	20	0
14816-18-3	Phoxim	0	0	20	13
137641-05-5	Picolinafen	0	0	20	13
	Potassium-40	14	0	0	0
709-98-8	Propanil	14	0	20	13
108-46-3	Resorcinol	0	0	20	0
100-42-5	Styrene	14	0	0	0
107534-96-3	Tebuconazole	14	0	0	0
95-94-3	1,2,4,5-tetrachlorobenzene	0	0	20	13
58-90-2	2,3,4,6-tetrachlorophenol	0	0	20	0
7440-32-6	Titanium	0	0	20	0
24017-47-8	Triazophos	29	0	20	13
126-73-8	Tri-n-butyl phosphate	0	0	20	13
52-68-6	Trichlorfon	14	0	20	13
71-55-6	1,1,1-trichloroethane	29	0	20	13
79-00-5	1,1,2-trichloroethane	29	0	0	0
15950-66-0	2,3,4-trichlorophenol	0	0	20	0
933-78-8	2,3,5-trichlorophenol	0	0	20	0
933-75-5	2,3,6-trichlorophenol	0	0	20	0
108-38-3	m-Xylene	0	0	20	13
95-47-6	o-Xylene	14	0	20	13
106-42-3	p-Xylene	0	0	20	13
Not applicable	Meta xylene + para xylene	14	0	20	0

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Figure 1. Number of substances reported by different Member States

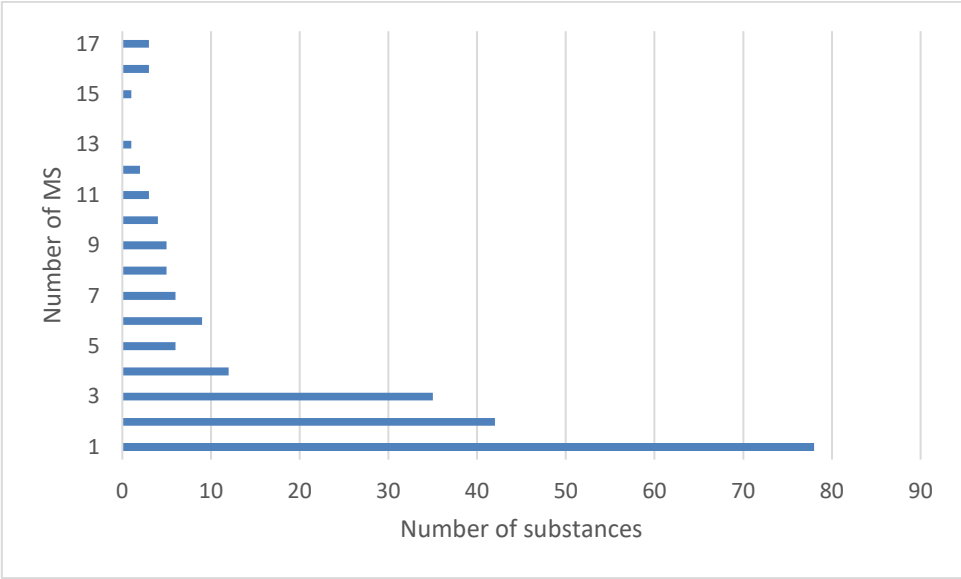


Figure 2. Consideration of non-compliant RBSP for MSFD reporting

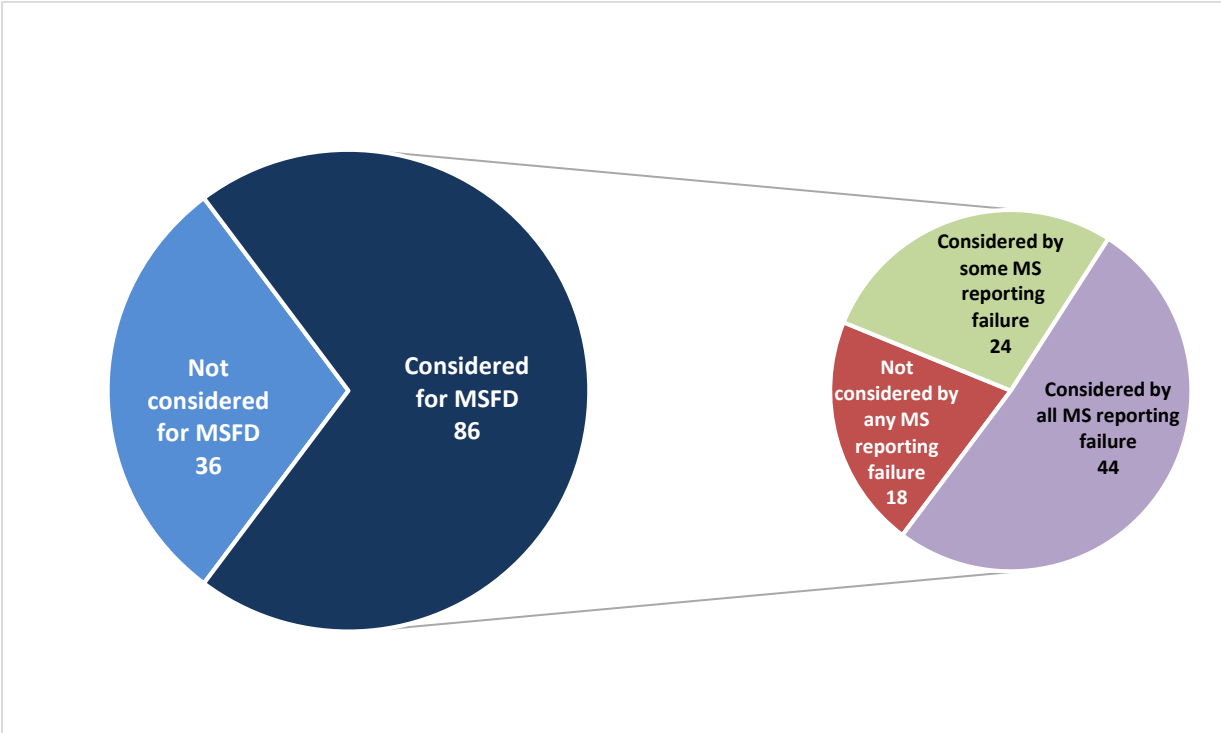
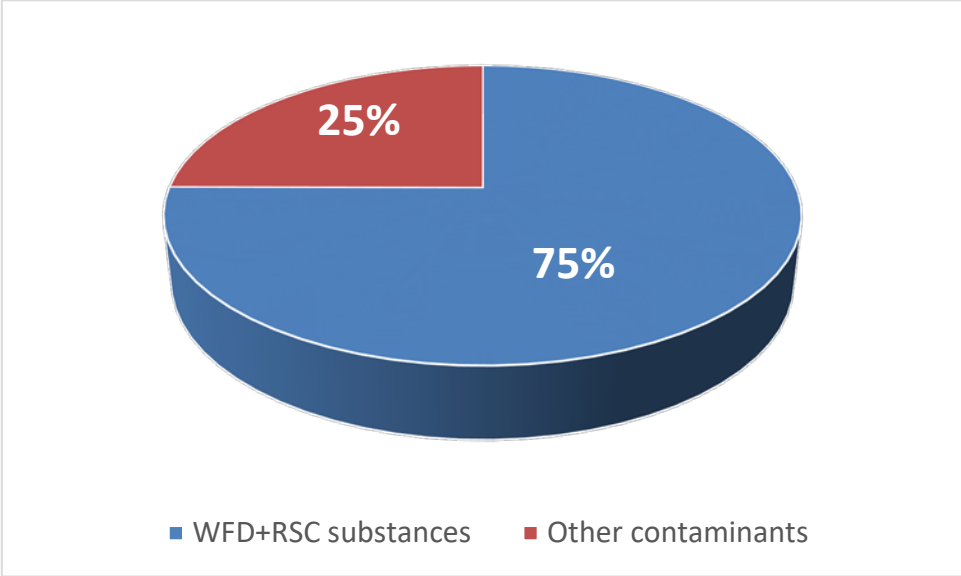


Figure 3. Proportion of substances used for MSFD reporting that are WFD (PS, RBSP, and Watch List) and/or RSC substances and additional contaminants



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