Baltic Marine Environment Protection Commission

Fifth Meeting of the Working Group on Reduction of Pressures from the Baltic Sea Catchment Area
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PRESSURE 5-2016

Document title	A suggestion to compile data on POPs of concern in the Baltic Sea area
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Background

HELCOM PRESSURE 4-2016 agreed on using the outcome from the questionnaire on POPs and micropollutants in future work on identifying pollutants of high concern in the Baltic Sea region, and agreed on having a summary of the outcomes in the PLC-6 report. PRESSURE 4-2016 also requested the RedCore DG to consider the results and to elaborate a proposal for compilation of more detailed national information on prioritised substances. Further, PLC-6 11-2016 considered a slightly more elaborated assessment of the questionnaire, and agreed that a first draft assessment summary should be prepared for PLC-6 12-2016 to be discussed further at PRESSURE 5-2016. The first draft was to be prepared by Sweden, assisted by Denmark.

The information request regarding possible concern on inputs of various persistent organic pollutants (POPs) and some other substances to the Baltic Sea was sent to the Contracting Parties in early 2016. The intention with the questionnaire was to get a better understanding on POPs and other substances that are included or are considered important to include by the Contracting Parties in air and riverine monitoring, and which substances that may need to be focused on in future HELCOM activities.

By "concern" in this context the interest is in substances that the Contracting Parties consider or believe to a significant degree are transported to the Baltic Sea via atmospheric deposition or via riverine transport.

NOTE! This task is to a large degree related to the work on micropollutants from WWTP effluents, and in fact the original questionnaire was a joint effort to collect the initial information from the Contracting Parties. However, due to practical reasons, as the following information collections are considered to be addressed to different experts within the Contracting Parties, the forthcoming work will be done separately. Although, eventually the information on micropollutants in the WWTP effluents will be an important part for assessing waterborne loads of hazardous pollutants to the Baltic Sea.

Action requested

The Meeting is invited to:

- consider the results of the section of the questionnaire dedicated to persistent organic pollutants (POPs) and other hazardous substances;
- discuss (*tour-de-table*) what may be reported by the Contracting Parties, i.e. which substances and what kind of monitoring data are available (loads for areas or individual rivers, only screening studies, only concentrations, etc.)
- agree on the next practical steps and the timeframe.

ACTION: Assessment of the input of the organic pollutants of high concern into the Baltic Sea.

Background information

Based on the information provided by the eight Contracting Parties that answered the questionnaire (i.e. DE, DK, EE, FI, LT, LV, SE and RF) some general tendencies were evident (cf. appendix XXX [the assessment provided to PLC11-2016]).

These weighed scores for the different substances indicate that for air monitoring and atmospheric deposition the substances of most concern are polyaromatic hydrocarbons (PAH) and dioxins including dioxin-like PCBs

In water the patterns of concern included nonylphenols and PFAS demonstrating the highest weighted score. A medium concern is also the case for most other substances on the common list, whereas less concern appears to be for medium-chained chlorinated paraffins, endosulfans, and heptachlor. Also PBDEs, polyaromatic hydrocarbons and organotin compounds tend to have a rather high concern in rivers.

The monitoring activities in air, atmospheric deposition, and in riverine waters are to a large degree reflecting the concern expressed by the Contracting Parties, but the monitoring also is heavily dependent on what is feasible to monitor or to detect by present analytical methods, and also on demands from different kind of legislative directives. No major changes in the monitoring of air and atmospheric deposition seems to be planned by the Contracting Parties, whereas the riverine monitoring seems mainly to shift more in the direction to fulfilment of the demands within the WFD.

***Proposed timetable**:* Start during 2016, until the end of 2018.

Proposed way forward regarding input of POPs

Based on the outcome of the questionnaire, the first data collection and assessment of inputs of organic pollutants is suggested to include nonylphenols, octylphenols, and PFAS. These substances were identified as generally having a high concern, and the stated data availability appears to be comparatively good for all three groups of pollutants. This also holds true for the WWTP effluents, which has already been suggested to be handled separately for practical reasons. A proposition for future work would be to include pharmaceutical residues as the next group of pollutants to consider for PLC-reporting (cf. the initial screening on these substances and the suggested Expert Group). The concern and the data availability for this group is very similar to the suggested groups to be prioritised, but will probably involve considerably more labour to compile and to assess, and hence is proposed not to be included in the first step.

The questionnaire also revealed that the air pollutants of the most concern are polyaromatic hydrocarbons (PAH) and dioxins including dioxin-like PCBs. The data on PAH are available in the most of the countries and the substances of these group are included into the national monitoring programmes. The opposite was revealed for dioxins. Despite the high level of concern, monitoring of these substances is not established in most of the countries and data are rather scares.

Possible steps forward

1) Clarifying discussions on what can be reported by the Contracting Parties at **PRESSURE 5-2016 with an intention to agree on priority substances to be included into the further investigation.**

2) Reporting of the information on the quality of the available data on the agreed substances, if further clarification is needed. **[March 2017] The results will be discussed at PRESSURE 6-2017 which will decide on the data collection procedure.** [A reporting template on the quality of

available data might be elaborated by the end of 2016 based on the result of the discussion at PRESSURE 5-2016].

3) Preparation of a reporting template (this data request will not be included in the ordinary PLC reporting as the necessary infrastructure is not in place, and as this is a test it will be for future consideration if the reporting will continue on a more regular basis). **[middle of 2017].**

4) Data reporting of riverine transport of agreed substances (e.g. nonylphenols, octylphenols, and PFAS). (Airborne PFAS/PFOS will be provided by EMEP from a test modelling, whereas atmospheric deposition is not considered to be a significant source for inputs of nonyl- and octylphenols). [**Late 2017]**.

5) Data compilation and assessment. **[2018].**

POPs and other substances of concern in the Baltic Sea area – results from a questionnaire to the HELCOM Contracting Parties

Background

This assessment originates from an information request from the HELCOM Pressure WG regarding the Contracting Parties' concern on inputs of various persistent organic pollutants (POPs) and some other substances to the Baltic Sea. The information gathered from the questionnaire is needed to get a better understanding on POPs and other substances that are included in air and riverine monitoring, and which substances that may need to be focused on in future HELCOM activities.

By "concern" in this context the interest is in substances that the Contracting Parties consider or believe to a significant degree are transported to the Baltic Sea via atmospheric deposition or via riverine transport.

The information will be used in the revision of the HELCOM list of Priority hazardous substances.

Results

The assessment is based on the information provided by the 8 Contracting Parties that answered the questionnaire (i.e. DE, DK, EE, FI, LT, LV, SE and RF). Unfortunately, some of the answers were not covering all subjects, probably due to lack of (time for) national coordination. This gives a somewhat unbalanced final results, but anyhow some general tendencies may be seen in the replies.

In an attempt to summaries the concern from the Contracting Parties on the various kinds of substances and groups of substances, a weighted approach was performed using a weight of 3 for major concern, 2 for intermediate, and 1 for little concern, whereas if the CP indicated lack of knowledge a value of 0 was applied and for substances that was indicated as not relevant a weight of -1 was used. The full overview of the replies is given in Appendix 1.

These weighed scores for the different substances indicate that for air monitoring and atmospheric deposition the substances of most concern are polyaromatic hydrocarbons (PAH) and dioxins including dioxin-like PCBs. The second largest concern are substances belonging to the groups non-dioxin-like PCBs, PBDEs, PFAS and HCHs, whereas the other substances were indicated to be of less concern or on some cases not relevant for air monitoring or atmospheric deposition.

In water the patterns of concern included nonylphenols and PFAS demonstrating the highest weighted score. A medium concern is also the case for most other substances on the common list, whereas less concern appears to be for medium-chained chlorinated paraffins, endosulfans, and heptachlor. Also PBDEs, polyaromatic hydrocarbons and organotin compounds tend to have a rather high concern in rivers.

In addition to these general patterns on the Contracting Parties concern, some additional substances of concern were given by some Contracting Parties, but due to the patchiness of these replies, they are only included in Annex 1.

The monitoring activities in air, atmospheric deposition, and in riverine waters are to a large degree reflecting the concern expressed by the Contracting Parties, but the monitoring also is heavily dependent on what is feasible to monitor or to detect by present analytical methods, and also on demands from different kind of legislative directives.

No major changes in the monitoring of air and atmospheric deposition seems to be planned by the Contracting Parties, whereas the riverine monitoring seems mainly to shift more in the direction to fulfilment of the demands within the WFD.

The overall data availability seems to be satisfactorily, with a general tendency to be more available through open access over internet for the air monitoring compared to more manual data handling for data with a riverine origin. This might be an effect of a stronger legislation and longer traditions within air monitoring.

Table 1. Weighted summary of the concern by CONTRACTING PARTIES on the various kinds of substances and groups of substances in air and atmospheric deposition, and in rivers and WWTP effluents. The weighing process is described in the main text.

Substance (group)	Air	Rivers
Dioxins (PCDD, PCDF, dioxin-like PCBs)	13	5
Other PCBs (other than dioxin-like)	6	6
Organotin compounds (TBT, TPhT, etc)	-4	7
PBDEs (pentaBDE, octaBDE, decaBDE)	6	9
PFAS (PFOS, PFOA)	6	10
HBCDD	2	6
Nonylphenols (NP, NPE)	-4	10
Octylphenols (OP, OPE)	-4	8
Short-chain chlorinated paraffins (C10-13)	1	4
Medium-chain chlorin. paraffins (C14-17)	-2	2
Endosulfan	2	3
DDTs (sum-DDT, DDE, etc)	4	6
PAHs (incl. metabolites)	15	9
BFRs (PBDEs etc)	3	6
HCHs (alpha, beta, gamma)	5	6
Heptachlor	0	1
Heavy metals		
Pharmaceutical residues		
Herbicides (except listed above)		
Fungicides (except listed above)		
Insecticides (except listed above)		
Endocrine disrupting substances (EDS, except listed above)		
Animal/veterinary drug residues (except listed above)		
Disinfectants (except listed above)		

APPENDIX 1. Overview over replies from the Contracting Parties to the questionnaire on POPs and other substances in air and atmospheric deposition, in riverine waters and effluents from waste water treatment plants

Air monitoring and atmospheric deposition

The replies to the questionnaire are given in the table below. The numbers given are the number of Contracting Parties that have expressed their **concern** at the respective degrees of concern, that they do not have the knowledge o that they consider the substance or group of substances not to be relevant for this matrix. The summarised replies for the respective category are illustrated by intensity of the colour for the category.

Substance (group)	Major	Inter-mediate	Little	Do not know	Not relevant
Dioxins (PCDD, PCDF, dioxin-like PCBs)	3	1	2		
Other PCBs (other than dioxin-like)	1	2	1		2
Organotin compounds (TBT, TPhT, etc)				2	4
PBDEs (pentaBDE, octaBDE, decaBDE)	2		1	2	1
PFAS (PFOS, PFOA)	2		1	2	1
HBCDD	1		1	2	2
Nonylphenols (NP, NPE)				2	4
Octylphenols (OP, OPE)				2	4
Short-chain chlorinated paraffins (C10-13)	1			3	2
Medium-chain chlorin. paraffins (C14-17)				3	2
Endosulfan	1		1	2	2
DDTs (sum-DDT, DDE, etc)	1	1	1	1	2
PAHs (incl. metabolites)	3	3			
BFRs (PBDEs etc)	1	1		2	2
HCHs (alpha, beta, gamma)		3	1		2
Heptachlor			2	2	2

The <u>monitoring</u> of air and in atmospheric deposition of the various kinds of substances within the Contracting Parties are illustrated in the table below. The numbers given are the number of Contracting Parties that have monitoring activities within the different monitoring categories. The summarised replies for the respective category are illustrated by intensity of the colour for the category.

Substance (group)	In regular monitoring	In screenings	Not monitored
Dioxins (PCDD, PCDF, dioxin-like PCBs)	1	1	3
Other PCBs (other than dioxin-like)	3	2	1
Organotin compounds (TBT, TPhT, etc)			5
PBDEs (pentaBDE, octaBDE, decaBDE)	2		3
PFAS (PFOS, PFOA)	1		4
HBCDD	1		4
Nonylphenols (NP, NPE)			5
Octylphenols (OP, OPE)			5
Short-chain chlorinated paraffins (C10-13)	2		3
Medium-chain chlorin. paraffins (C14-17)	1		4

Endosulfan	2	1	2
DDTs (sum-DDT, DDE, etc)	3	2	1
PAHs (incl. metabolites)	7		
BFRs (PBDEs etc)	1		4
HCHs (alpha, beta, gamma)	3	2	1
Heptachlor	2	1	3

The availability of data from air and in atmospheric deposition monitoring is given in the table below. The numbers given are the number of Contracting Parties that have classified their data availability according to the different categories. The summarised replies for the respective category are illustrated by intensity of the colour for the category.

Substance (group)	**Good data availability**		**Some data available**	**Data reports**		**No data available**
	Open access	**Manual handling**		**Eng.**	**Native**	
Dioxins (PCDD, PCDF, dioxin-like PCBs)	1				1	3
Other PCBs (other than dioxin-like)	3	1		1		1
Organotin compounds (TBT, TPhT, etc)						5
PBDEs (pentaBDE, octaBDE, decaBDE)	2					3
PFAS (PFOS, PFOA)	1					4
HBCDD	1					4
Nonylphenols (NP, NPE)						5
Octylphenols (OP, OPE)						5
Short-chain chlorinated paraffins (C10-13)	2					3
Medium-chain chlorin. paraffins (C14-17)	1					4
Endosulfan	2	1				2
DDTs (sum-DDT, DDE, etc)	3	1		1		1
PAHs (incl. metabolites)	3	3			2	
BFRs (PBDEs etc)	1					4
HCHs (alpha, beta, gamma)	3	1		1		1
Heptachlor	2	1				3

Additional information given as supplementary text in the questionnaire

Sweden added that HCB is included in regular monitoring and with open access to the data, and Latvia noted that HCB is of intermediate concern in their country.

Five out of the responding eight Contracting Parties have responded that there are no planned changes to their air monitoring or that there is no information on any changes. Additionally, Sweden noted that there will be a review of their monitoring during 2016, but it will probably not imply ant major changes even though there will hopefully be more monitoring on PFASs in the future. Denmark added information that a revised NOVANA-program will start in 2017, but probably not including any POPs.

Riverine monitoring and transport

The replies to the questionnaire are given in the table below. The numbers given are the number of Contracting Parties that have expressed their concern at the respective degrees of concern, that they do not have the knowledge o that they consider the substance or group of substances not to be relevant for this matrix. The summarised replies for the respective category are illustrated by intensity of the colour for the category.

Substance (group)	Major	Inter-mediate	Little	Do not know	Not relevant
Dioxins (PCDD, PCDF, dioxin-like PCBs)	1	1	1	2	1
Other PCBs (other than dioxin-like)		2	3		1
Organotin compounds (TBT, TPhT, etc)		3	2		1
PBDEs (pentaBDE, octaBDE, decaBDE)	2	1	2		1
PFAS (PFOS, PFOA)	2	2	1	1	1
HBCDD	1	2		3	1
Nonylphenols (NP, NPE)		4	2		
Octylphenols (OP, OPE)		2	4		
Short-chain chlorinated paraffins (C10-13)		1	3	1	1
Medium-chain chlorin. paraffins (C14-17)			3	2	1
Endosulfan		1	3		2
DDTs (sum-DDT, DDE, etc)	1	1	3		2
PAHs (incl. metabolites)		4	1		
BFRs (PBDEs etc)	1	1	1	2	
HCHs (alpha, beta, gamma)	1	1	3		2
Heptachlor		1	1	2	2

The **monitoring** in rivers of the various kinds of substances within the Contracting Parties are illustrated in the table below. The numbers given are the number of Contracting Parties that have monitoring activities within the different monitoring categories. The summarised replies for the respective category are illustrated by intensity of the colour for the category

Substance (group)	In regular monitoring	In screenings	Not monitored
Dioxins (PCDD, PCDF, dioxin-like PCBs)	1	3	3
Other PCBs (other than dioxin-like)	2	1	3
Organotin compounds (TBT, TPhT, etc)	3	2	2
PBDEs (pentaBDE, octaBDE, decaBDE)	2	3	2
PFAS (PFOS, PFOA)	4	3	
HBCDD	2	2	3
Nonylphenols (NP, NPE)	4	2	1
Octylphenols (OP, OPE)	4	2	1
Short-chain chlorinated paraffins (C10-13)	1	3	3
Medium-chain chlorin. paraffins (C14-17)		2	5
Endosulfan	4	1	2
DDTs (sum-DDT, DDE, etc)	5	1	2
PAHs (incl. metabolites)	3	2	1
BFRs (PBDEs etc)	1	4	2
HCHs (alpha, beta, gamma)	5	1	2
Heptachlor	3	2	2

The availability of data riverine monitoring is given in the table below. The numbers given are the number of Contracting Parties that have classified their data availability according to the different categories. The summarised replies for the respective category are illustrated by intensity of the colour for the category.

Substance (group)	Good data availability		Some data available	Data reports		No data available
	Open access	Manual handling		Eng.	Native	
Dioxins (PCDD, PCDF, dioxin-like PCBs)		1	2		1	2
Other PCBs (other than dioxin-like)		3				2
Organotin compounds (TBT, TPhT, etc)	1	3	1			2
PBDEs (pentaBDE, octaBDE, decaBDE)	2	2	1			1
PFAS (PFOS, PFOA)	1	3	2		1	
HBCDD		1	2		1	2
Nonylphenols (NP, NPE)	1	3	2			1
Octylphenols (OP, OPE)	1	4	1			1
Short-chain chlorinated paraffins (C10-13)	1	1	1			3
Medium-chain chlorin. paraffins (C14-17)		1	1			4
Endosulfan	1	4				1
DDTs (sum-DDT, DDE, etc)	1	4			1	1
PAHs (incl. metabolites)	1	3	1			1
BFRs (PBDEs etc)		1	2			3
HCHs (alpha, beta, gamma)	1	4			1	1
Heptachlor		2	2		1	1

Additional information given as supplementary text in the questionnaire

Finland added information that they also monitor E1 and EE2, and also short-term peaks of the herbicide triasulfuron even though the substance is to be degraded quite easily and should not possess any treat to the Baltic Sea. Estonia included information on their monitoring of phthalates (DEHP monitored occasionally), and plant protection products (pesticides) that are monitored and data are available.

Estonia stated that their focus will be on WFD priority substances in water, sediments and biota, with an increased monitoring frequency and coverage. They will also introduce passive sampling. Also Latvia informs that starting from 2015-2016 the new WFD priority substances (no 34-45) are planned in water/biota. Finland will shift their monitoring to smaller streams in 2016/2017. Sweden will have survey campaigns with more PFAS, some pesticides, and alkylphenols. Lithuania says that they might change their riverine monitoring depending on financial resources and the capacity of the national laboratory. No specific information on changed riverine monitoring of POPs were given by Denmark, Germany and Russia.