OSPAR COMMISSION

Levels and trends in marine contaminants and their biological effects – CEMP Assessment report 2018

2019

Monitoring and Assessment Series

OSPAR Convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. The Contracting Parties are Belgium, Denmark, the European Union, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom of Great Britain and Northern Ireland.

Convention OSPAR

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. Les parties contractantes sont : l'Allemagne, la Belgique, le Danemark, l’Espagne, la Finlande, la France, l’Irlande, l’Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d’Irlande du Nord, la Suède, la Suisse et l’Union européenne.

Acknowledgements

Intersessional work since MIME 2018 and preparation of this report have been undertaken by the Working Group on Monitoring and on Trends and Effects of Substances in the Marine Environment (MIME), led by Dr Rob Fryer. Special thanks to Dr Rob Fryer, United Kingdom, for his hard work in producing this report.

Executive Summary

This report summarises the 2018-19 annual CEMP assessment of levels and trends of contaminants and their biological effects. The full assessment is available online at: http://dome.ices.dk/osparmime2018/main.html and https://ocean.ices.dk/oat/.

There were 7909 time series (of three years or more) in biota, of which 5401 were assessed for trends and 7518 for status; 4507 time series in sediment, of which 3253 were assessed for trends and 4022 for status; and 124 time series in water, of which 76 were assessed for trends and 124 for status.

The report tabulates the number of upward and downward trends by contaminant and OSPAR region. It also tabulates the number of time series with levels below the Background Assessment Concentration or below the Environmental Assessment Criteria (or equivalent).

Récapitulatif

Le présent rapport est un récapitulatif de l'évaluation annuelle de 2018-2019, réalisée dans le cadre du CEMP. Elle porte sur les niveaux et tendances des contaminants et leurs effets biologiques. L'évaluation complète est disponible en ligne, sur les sites http://dome.ices.dk/osparmime2018/main.html et https://ocean.ices.dk/oat/.

Il existe 7909 séries temporelles (sur au moins trois ans) pour le milieu vivant, dont 5401 ont été évaluées pour les tendances et 7518 pour le statut; 4507 pour les sédiments, dont 3253 ont été évaluées pour les tendances et 4022 pour le statut; et 124 pour l'eau, dont 76 ont été évaluées pour les tendances et 124 pour le statut.

Ce rapport compile le nombre de tendances à la hausse et à la baisse et ce par contaminant et par Région OSPAR. Il compile également le nombre de séries temporelles dont les niveaux sont inférieurs aux teneurs d'évaluation ambiantes ou aux critères d'évaluation écologique (ou équivalents).

Levels and trends in marine contaminants and their biological effects – CEMP Assessment report 2018

The 2018-19 annual CEMP assessment (http://dome.ices.dk/osparmime2018/main.html and https://ocean.ices.dk/oat/) assessed 7909 time series (of three years or more) in biota, of which 5401 were assessed for trends and 7518 for status; 4507 time series in sediment, of which 3253 were assessed for trends and 4022 for status; and 124 time series in water, of which 76 were assessed for trends and 124 for status. A breakdown of trends and status by region and determinand is given in Tables 1-6. The assessment methodology is described in the help files that accompany the assessment.

Table 1: Summary of trends in contaminants and biological effects in biota

	Region I			**Region II**			**Region III**			**Region IV**		
	total	down	up	total	down	up	total	down	up	total	down	up
Metals												
CD	19	2	2	152	28	26	73	29	6	57	13	9
HG	20	3	1	164	25	29	64	8	5	55	10	5
PB	15	4	1	151	34	22	71	10	7	57	19	5
CU	18	5	1	146	25	9	70	10	2	57	1	5
ZN	23	3	4	150	24	16	72	12	1	57	10	2
PAHs (parent)												
NAP	1	0	0	46	9	2	11	0	0	10	0	0
PA	3	0	0	77	10	3	32	4	4	42	3	1
ANT	2	0	0	34	4	2	11	4	1	25	7	1
DBT				8	4	0						
FLU	3	1	0	79	11	6	34	4	2	44	11	0
PYR	2	0	0	82	14	4	33	7	2	44	12	0
BAA	2	2	0	49	8	3	18	7	0	42	11	1
CHR	2	0	0	62	16	2	22	7	0	44	14	0
BAP	2	2	0	30	6	1	10	1	0	36	4	1
BGHIP	2	2	0	31	8	0	16	3	0	28	6	0
ICDP	2	2	0	26	9	1	12	0	0	28	6	0
CBs												
CB28	6	5	0	68	31	1	47	16	1	24	10	0
CB52	14	9	0	93	33	1	48	19	1	36	13	0
CB101	16	8	1	129	53	3	55	24	0	45	23	0
CB105	10	7	0	47	23	2	30	9	1	41	13	0
CB118	18	13	0	132	61	3	62	25	2	45	16	1
CB126				3	1	0						
CB138	19	12	0	112	65	4	60	28	1	42	24	0
CB153	19	9	0	142	58	4	64	17	1	46	23	0
CB156	4	3	0	32	11	1	18	1	0	30	14	0
CB169				2	0	0						
CB180	11	3	0	99	33	3	46	10	1	41	19	0
Organobromines												
BDE28	3	2	0	16	9	0	11	3	0			

	Region I			Region II			Region III			Region IV		
BDE47	5	3	0	37	25	0	30	20	0	21	5	1
BDE99	3	2	0	26	11	1	22	14	0	21	9	1
BD100	5	3	0	33	12	1	27	16	0	20	7	1
BD153	1	1	0	14	3	1	16	8	0	6	0	0
BD154	3	0	0	15	8	1	21	9	1	13	2	0
HBCD				6	2	0						
Pesticides												
DDEPP	15	3	0	52	19	2	28	3	1	32	8	0
HCB	15	2	0	40	13	1	21	6	0	5	0	0
HCHA	10	8	0	9	5	0	19	9	0	17	2	0
HCHG	8	5	0	27	16	1	21	8	0	29	12	0
Dioxins, furans and PFCs												
TCDD				4	0	0	4	0	0			
CDF2T				3	0	0	1	0	0			
PFOS	3	3	0	5	5	0						
Organometals												
MBSN+				13	8	0						
DBSN+				19	14	0						
TBSN+	1	1	0	26	15	0	0	0	0	4	3	0
TPSN+				3	1	0						
Biological effects												
EROD				34	6	1	30	14	0			
PYR1OH				29	2	4	15	0	2			
PA1OH				4	2	0						
BAP3OH				3	1	0						
ALAD				3	0	0						
GST				1	1	0						
SFG										17	4	0
VDS	2	1	0	94	38	0	11	1	0	10	3	0
INTS				5	0	0						

Table 2: Summary of trends in contaminants in sediment

	Region II			Region III			Region IV		
	total	down	up	total	down	up	total	down	up
Metals									
CD	65	14	1	19	2	3	29	1	1
HG	67	24	0	25	7	0	29	7	1
PB	76	18	4	25	7	2	29	3	1
AS	61	6	3	25	0	4	29	0	3
CR	70	4	3	25	5	1	29	6	0
CU	73	16	2	25	7	0	28	0	3
NI	75	5	5	25	4	1	29	0	1
ZN	72	10	0	25	8	1	29	10	0
PAHs (parent)									
NAP	49	2	0	23	7	0			
PA	71	20	0	27	2	2	29	7	0
ANT	67	11	6	24	2	2	29	7	1
DBT	14	1	2	14	4	0			
FLU	71	14	1	26	3	1	29	7	0
PYR	71	19	2	27	4	2	29	9	0
BAA	69	11	1	24	3	2	28	7	0
CHR	71	13	3	24	3	3	29	7	0
BAP	70	17	2	25	3	1	29	10	0
BGHIP	70	17	3	26	6	1	29	3	0
ICDP	70	16	2	26	4	1	29	15	0
PAHs (alkylated)									
NAPC1	10	3	0	4	0	0			
NAPC2	25	2	1	19	3	0			
NAPC3	26	3	1	19	4	0			
PAC1	16	2	1	15	2	2			
PAC2	16	2	2	15	5	0			
PAC3	10	0	2	11	3	1			
DBTC1	15	1	2	14	2	2			
DBTC2	15	1	0	14	4	0			
DBTC3	15	1	3	14	3	2			
CBs									
CB28	42	11	2	13	2	2	20	0	2
CB52	39	11	1	15	3	1	26	5	5
CB101	47	14	2	16	5	1	19	0	0
CB105	12	4	0	7	0	1	20	0	0
CB118	48	18	1	17	2	2	19	0	1
CB138	51	22	0	16	3	0	22	0	0
CB153	53	16	1	18	2	4	26	0	0
CB156	2	0	0	6	0	0	19	0	1
CB180	44	15	1	13	1	1	21	0	0

	Region II			Region III			Region IV
Organobromines							
BDE28				2	0	0	
BDE47	5	0	0	10	1	0	
BDE66				4	1	0	
BDE85				1	1	0	
BDE99				5	2	0	
BD100				2	1	0	
BD153				6	0	0	
BD154				3	2	0	
BD183				5	1	0	
BD209				1	0	0	
Organometals							
MBSN+	29	6	1				
DBSN+	27	15	0				
TBSN+	26	18	0				

Table 3: Summary of trends in contaminants in water

	Region II			Region III		
	total	down	up	total	down	up
Metals						
CD	9	1	1	0	0	0
PB	19	1	0	0	0	0
NI	24	5	0	2	0	0
PAHs (parent)						
BAP	22	2	0			

Table 4: Summary of status of contaminants and biological effects in biota: B = blue, G = green, O = orange (above BAC, but no EAC or equivalent), R = red

	Region I				Region II				Region III				Region IV			
	B	G	O	R	B	G	O	R	B	G	O	R	B	G	O	R
Metals																
CD	2	20	0	2	49	131	0	6	29	53	0	2	44	11	0	3
HG	13	10	0	1	14	180	0	0	5	78	0	0	8	50	0	0
PB	13	10	0	1	28	153	0	5	18	57	0	7	18	38	0	2
CU	8	0	8	0	15	0	108	0	7	0	55	0	8	0	50	0
ZN	1	0	15	0	0	0	121	0	0	0	64	0	0	0	58	0
PAHs (parent)																
NAP	0	3	0	0	0	77	0	6	0	21	0	4	0	21	0	0
PA	0	4	0	0	2	102	0	1	1	41	0	0	6	47	0	0
ANT	0	4	0	0	0	78	0	3	0	34	0	1	0	43	0	0
FLU	0	3	0	3	2	91	0	12	3	35	0	4	9	41	0	2

	Region I				Region II				Region III				Region IV			
PYR	0	1	0	3	4	86	0	14	1	30	0	10	6	45	0	2
BAA	0	3	0	1	0	73	0	4	1	22	0	2	5	46	0	2
CHR	1	0	3	0	7	0	94	0	6	0	32	0	9	0	44	0
BAP	0	3	0	1	1	68	0	0	2	23	0	0	4	46	0	0
BGHIP	0	3	0	0	1	68	0	2	0	23	0	2	3	48	0	0
ICDP	0	0	3	0	3	0	64	0	1	0	21	0	5	0	46	0
CBs																
CB28	9	12	0	1	39	102	0	21	20	40	0	11	38	11	0	0
CB52	9	12	0	2	11	131	0	15	15	47	0	10	16	39	0	1
CB101	9	13	0	1	6	128	0	37	12	52	0	11	5	44	0	8
CB105	9	0	2	0	9	0	64	0	19	0	21	0	21	0	36	0
CB118	12	3	0	8	5	52	0	118	8	27	0	48	0	19	0	38
CB138	7	15	0	1	0	133	0	23	5	65	0	6	0	51	0	6
CB153	4	19	0	0	0	169	0	8	0	84	0	0	0	57	0	0
CB156	9	0	2	0	19	0	47	0	22	0	15	0	34	0	20	0
CB180	9	14	0	0	23	133	0	2	15	54	0	2	12	45	0	0
Organobromines																
BDE28	0	7	0	0	0	43	0	1	0	40	0	0	0	21	0	0
BDE47	0	12	0	0	0	57	0	2	0	45	0	0	0	23	0	0
BDE99	0	9	0	0	0	52	0	1	0	36	0	4	0	23	0	0
BD100	0	5	0	4	0	42	0	13	0	30	0	12	0	23	0	0
BD153	0	4	0	0	2	43	0	0	0	37	0	0	0	23	0	0
BD154	0	5	0	0	0	33	0	2	0	35	0	3	0	23	0	0
HBCD	0	0	3	0	0	0	15	0								
Pesticides																
DDEPP	8	0	7	0	0	0	86	0	0	0	38	0	0	0	49	0
HCB	11	0	4	0	15	0	41	0	26	0	7	0	17	0	7	0
HCHA	9	0	0	0	7	0	30	0	26	0	2	0	21	0	23	0
HCHG	9	2	0	0	21	17	0	24	24	2	0	7	35	10	0	3
Organometals																
TBSN+					0	0	0	38					0	6	0	5
Biological effects																
EROD					25	0	15	0	20	0	10	0				
PYR1OH					5	16	13	0	0	13	0	0				
PA1OH					1	0	3	0								
SFG													1	11	0	11
VDS	1	1	0	0	15	53	0	30	1	5	0	5	1	4	0	20

Table 5: Summary of status of contaminants in sediment: B = blue, G = green, O = orange (above BAC, but no EAC or equivalent), R = red

	Region II				Region III				Region IV			
	B	G	O	R	B	G	O	R	B	G	O	R
Metals												
CD	21	58	0	7	20	7	0	1	3	25	0	1
HG	14	13	0	61	9	9	0	9	0	8	0	21
PB	16	5	0	67	9	5	0	14	1	1	0	27
AS	28	0	43	0	22	0	6	0	0	0	0	29
CR	0	19	0	67	0	5	0	23	0	7	0	22
CU	45	18	0	24	15	4	0	9	0	2	0	27
NI	35	0	53	0	6	0	22	0	0	2	0	27
ZN	19	8	0	61	10	6	0	12	0	10	0	19
PAHs (parent)												
NAP	11	45	0	9	2	27	0	3				
PA	14	61	0	10	3	19	0	10	13	12	0	4
ANT	11	68	0	6	6	21	0	5	8	19	0	2
DBT	0	17	0	0	0	15	0	0				
FLU	14	67	0	4	5	24	0	3	12	15	0	2
PYR	12	71	0	2	4	25	0	3	10	19	0	0
BAA	16	63	0	5	3	23	0	5	11	15	0	2
CHR	9	73	0	2	3	25	0	3	13	16	0	0
BAP	23	58	0	3	4	25	0	2	13	16	0	0
BGHIP	47	0	37	0	5	0	26	0	11	0	18	0
ICDP	54	0	30	0	8	0	23	0	13	0	16	0
CBs												
CB28	5	58	0	6	4	22	0	2	0	22	0	2
CB52	2	59	0	3	1	22	0	3	0	25	0	2
CB101	0	62	0	7	2	22	0	3	0	11	0	9
CB118	4	29	0	36	1	9	0	18	0	3	0	17
CB138	5	62	0	2	1	25	0	2	0	17	0	6
CB153	5	64	0	0	0	27	0	0	0	27	0	0
CB180	4	65	0	0	1	26	0	0	0	19	0	4
Organobromines												
BDE28	0	13	0	0	0	13	0	0	0	7	0	0
BDE47	0	48	0	1	0	19	0	0	14	15	0	0
BDE66	1	14	0	0	1	13	0	0	24	5	0	0
BDE85	1	11	0	0	0	10	0	1	0	0	0	1
BDE99	0	32	0	12	0	15	0	3	17	10	0	2
BD100	0	18	0	6	0	14	0	1	13	2	0	0
BD153	0	31	0	0	0	14	0	0	6	9	0	0
BD154	0	25	0	0	2	13	0	0	13	2	0	0
BD183	1	35	0	0	5	10	0	0	6	10	0	0
BD209	0	15	0	17	0	5	0	6	0	0	0	0
Organometals												

	Region II				Region III				Region IV			
TBSN+	0	0	0	33	0	0	0	5	0	0	0	0

Table 6: Summary of status of contaminants in water: G = green, R = red

	Region II		Region III	
	G	R	G	R
Metals				
CD	9	0	9	0
PB	20	7	9	0
NI	27	0	16	0
PAHs (parent)				
BAP	19	8		

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OSPAR's vision is of a clean, healthy and biologically diverse North-East Atlantic used sustainably

ISBN: 978-1-911458-76-0
Publication Number: 736/2019