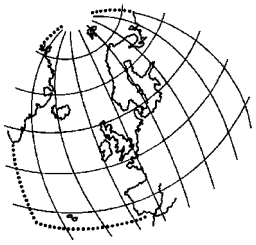
OSPAR CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTH-EAST ATLANTIC



Agreement on Background Concentrations for Contaminants in Seawater, Biota and Sediment

(OSPAR Agreement 2005-6)[1]

Replaces OSPAR Agreement 1997-14

Background concentrations

1. "Background concentrations" (BCs) are assessment tools intended to represent the concentrations of certain hazardous substances that would be expected in the North-East Atlantic if certain industrial developments had not happened. They represent the concentrations of those substances at "remote" sites, or in "pristine" conditions based on contemporary or historical data respectively, in the absence of significant mineralisation and/or oceanographic influences. In this way they relate to the background values referred to in the OSPAR Hazardous Substances Strategy.

2. The BCs in the accompanying tables should be used as tools for assessing data collected under the Coordinated Environmental monitoring Programme (CEMP). In this context BCs for xenobiotic compounds should be regarded as zero.

3. These BCs can be applied throughout the OSPAR maritime area. Due to the significant geological variability which can be expected between the different environments in the OSPAR maritime area, the natural background should be regarded as having substantial inherent variability. On account of this, local conditions should be taken into account in assessing the significance of any excedence.

4. BCs do not represent target values and should not be used as such.

5. Where no updated BCs have been developed, the background/reference concentrations agreed by OSPAR in 1997 are included in this set of assessment tools, i.e for metals in fish and mussels, for PAHs in seawater and for certain metals and PAHs in sediments.

6. OSPAR will continue to examine additional data on concentrations of hazardous substances at "remote" sites, or in "pristine" conditions with a view to consolidating the values in the attached tables. OSPAR will give particular attention to the need to update BCs for metals in fish and mussels through seeking to improve the dataset on concentrations from remote sites.

Background assessment criteria

7. "Background assessment criteria" (BACs) are statistical tools defined in relation to the background concentrations (BCs), which enable testing of whether mean observed concentrations can be considered to be near background concentrations.

8. BACs should be calculated according to the method set out in Section 6.1 of the 2004 report of the ICES Advisory Committee on the Marine Environment. The outcome of this method is that, on the basis of what is known about variability in observations, there is a 90% probability that the observed mean concentration will be below the BAC when the true mean concentration is at the BC. Where this is the case the true concentrations can be regarded as "near background"(for naturally occurring substances) or "close to zero" (for artificial, man-made substances).

9. The BACs set out in the accompanying tables have been calculated on the basis of variability on within the current CEMP dataset and will be refined as further data CEMP monitoring data is collected.

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[1] Revised by ASMO 2006 (ASMO 2006 Summary Record (ASMO 06/12/1) § 5.38.

Metals in sediments

Table 1. BCs and provisional BACs for metals in sediments

Metal	Sediment (mg kg^{-1} dry weight normalised to 5% Al)		
	Range of BRC	*BC*	*BAC*
Arsenic		15	25
Cadmium		**0,2**	**0,31**
Chromium		60	81
Cobalt	7-23		
Copper		20	27
Iron	0,6-6,3		
Lead		**25**	**38**
Lithium	22-44		
Mercury		**0,05**	**0,07**
Nickel		30	36
Titanium	0,2-0,35		
Vanadium	60-110		
Zn		90	122

Notes: (1) Bold text indicates metals that are OSPAR Chemicals for Priority Action
(2) BRC values are those adopted in 1997 with a conversion to the appropriate units

Metals in fish and mussels

Table 2. Range of background concentrations for blue mussels (as adopted by OSPAR 1997)

Element	BRC mg kg^{-1} wet weight
Cadmium	**0,07–0,11**
Copper	0,76–1,10
Lead	**0,010–0,19**
Mercury	**0,005–0,010**
Zinc	11,6–30

Note: Bold text indicates metals that are OSPAR Chemicals for Priority Action

Table 3. Range of background concentrations for mercury in the muscle of round fish and flatfish (as adopted by OSPAR 1997)

Element	BRC mg kg^{-1} wet weight	Comment
Mercury	0,01–0,05	round fish
Mercury	0,03–0,07	flatfish

PAHs in sediments and mussels

Table 4. BCs and provisional BACs for PAHs in sediments and mussels

PAH	Sediment (µg kg^{-1} dry weight normalised to 2,5% organic carbon)		Mussel (µg kg^{-1} dry weight)	
	BC	*BAC*	*BC*	*BAC*
Naphthalene	5	8	1	81,2
Phenanthrene	17	32	4,5	12,6
Anthracene	3	5	1	2,7
Fluoranthene	20	39	7	11,2
Pyrene	13	24	5,5	10,1
Benz[*a*]anthracene	9	16	1,5	3,6
Chrysene	11	20	6,5	21,8
Benoz[*a*]pyrene	15	30	1	2,1
Benzo[*ghi*]perylene	45	80	2,5	7,2
Indeno[123-*cd*]pyrene	50	103	2	5,5

Table 5. Maximum background reference concentrations adopted in 1997 in (µg kg^{-1} dry weight) of selected PAHs in surface sediments (normalised to 2,5% organic carbon) for the application in selected regions of the Convention area

	S North Sea	N North Sea	Barents sea	Arctic to Iceland
C1-Naphthalenes			4219	
C2-Naphthalenes			4852	
C3-Naphthalenes			1364	
Acenaphthylene	8	4	2	3
Acenaphthene	12	6	3	1
Fluorene	29	17	90	5
C1-Phenanthrenes			757	
C2-Phenanthrenes			1003	
Benzo[*b-k*]fluorenthene	272	458	45	97
Dibenzo[*a.h*]anthracene	16	30	12	12
Perylene			598	

Note: A conversion has been applied to express these values in the same way as BCs in Table 4

Polychlorinated biphenyls

Table 6. BCs and provisional BACs for PCBs in sediments, mussels and fish liver

Polychlorinated biphenyl (CB)	**Sediment (µg kg^{-1} dry weight normalised to 2,5% organic carbon)**		**Mussel (µg kg^{-1} dry weight)**		**Fish liver (µg kg^{-1} wet weight)**	
	BC	***BAC*[1]**	***BC***	***BAC*[2]**	***BC***	***BAC***
CB153	0	0,2	0	1,1	0	0,2
Sum_7CB	0	1,5	0	4,6	0	1,2

[1] The BACs are based on nominal low but measurable concentrations of CBs of 0,1 µg kg^{-1} normalised to 2,5% organic carbon for the individual CB and 0,4 µg kg^{-1} normalised to 2,5% organic carbon for the Sum_7CB

[2] The BACs are based on nominal low but measurable concentrations of CBs of 0,1 µg kg^{-1} wet weight for the individual CB and 0,4 µg kg^{-1} wet weight for the Sum_7CB

Metals in seawater *(as adopted in 1997)*

Table 7 Ranges of background concentrations of dissolved trace metals[ng/kg] in specific regions of the Convention area

Element	Atlantic Ocean	Northern North Sea	English Channel Southern North Sea	Celtic Sea
Cd	5-25	8-25	9-12	4-12
Cu	50-100	50-90	140-360	60-80
Co			6-24	3-5
Cr (VI)	90-120			
Fe	25-150	200-600		
Pb	5-20	10-20	10-17	10-20
Mn	10-25	60-150		
Hg	0,1-0,4	0.2-0.5		
Ni	160-250	200-250	180-260	120-160
Se (IV)	2-20			
V	1250-1450	1250-1450	900-1050	
U	3000-3500	3000-3500		
Zn	30-200	250-450	170-280	120

PAHs in seawater*(as adopted in 1997)*

Table 8: Ranges of background concentration of selected PAHs in surface water [ng/l] for the application in specific regions of the Convention Area.

Substance	Northeast Atlantic		North. North Sea		Central North Sea Southern North Sea	
	min	max	min	max	min	max
Naphthalene	0,101	0,259	0,279	0,661	0,416	2,678
C1-Naphthalenes	0,114	0,286	0,202	0,589	0,437	3,481
C2-Naphthalenes	0,131	0,307				
Acenaphthene	0,018	0,046	0,016	0,034	0,039	0,130
Acenaphthylene	0,002	0,005	0,002	0,010	0,000	0,036
Fluorene	0,023	0,051	0,074	0,194	0,364	0,805
Anthracene	0,001	0,004			0,000	0,004
Phenanthrene	0,080	0,205	0,130	0,254	0,262	0,636
C1- Phenanthrene	0,045	0,095				
DBT	0,012	0,025	0,018	0,042	<0,001	0,065
DBTC1	0,018	0,036				
Fluorenthene	0,036	0,054	0,073	0,285	0,104	0,264
Pyrene	0,020	0,033	0,014	0,053	0,011	0,024
Benzo[*a*]anthracene	0,001	0,001	0,001	0,006	0,001	0,004
CHR_TRI	0,006	0,012	0,019	0,056	0,036	0,057
BbF	0,001	0,004	0,004	0,017	0,003	0,009
BkF	0,001	0,003				
BeP	0,002	0,005	3,000	0,014	0,003	0,008
Benzo[*a*]pyrene	0,001	0,001	0,002	0,005	0,002	0,004
Perylene	<0,001	<0,001	<0,001		<0,001	
DBacA	<0,001	<0,001				
Indeno[*1.2.3.c.d*]pyrene	0,001	0,003	0,004	0,017	0,006	0,012
Benzo[*g.h.i*]perylene	0,001	0,011	0,001	0,010	0,001	0,008
COR	0,000	0,011				