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POPs in fish from UK marine waters: an investigation in the context of MSFD

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Marine Strategy Framework Directive

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)

relevance)

impact on marine waters regardless of where their effects occur.

CHAPTER I

GENERAL PROVISIONS

Article 1

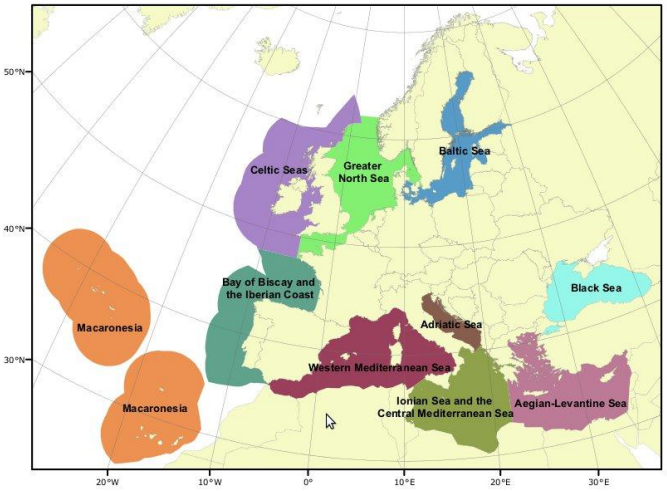
Subject matter

1. This Directive establishes a framework within whic Member States shall take the necessary measures to achieve o maintain good environmental status in the marine environmen by the year 2020 at the latest.

Article 9

Determination of good environmental status

1. By reference to the initial assessment made pursuant to Article 8(1), Member States shall, in respect of each marine region or subregion concerned, determine, for the marine waters, a set of characteristics for good environmental status, on the basis of the qualitative descriptors listed in Annex I.



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Good Environmental Status (GES)

Descriptors

1. Biodiversity

2. Non-indigenous species

3. Fish stocks

4. Marine food web

5. Eutrophication

6. Sea floor integrity

7. Hydrography

8. Pollution

9. Safety of sea food

10. Litter

11. Energy / noise

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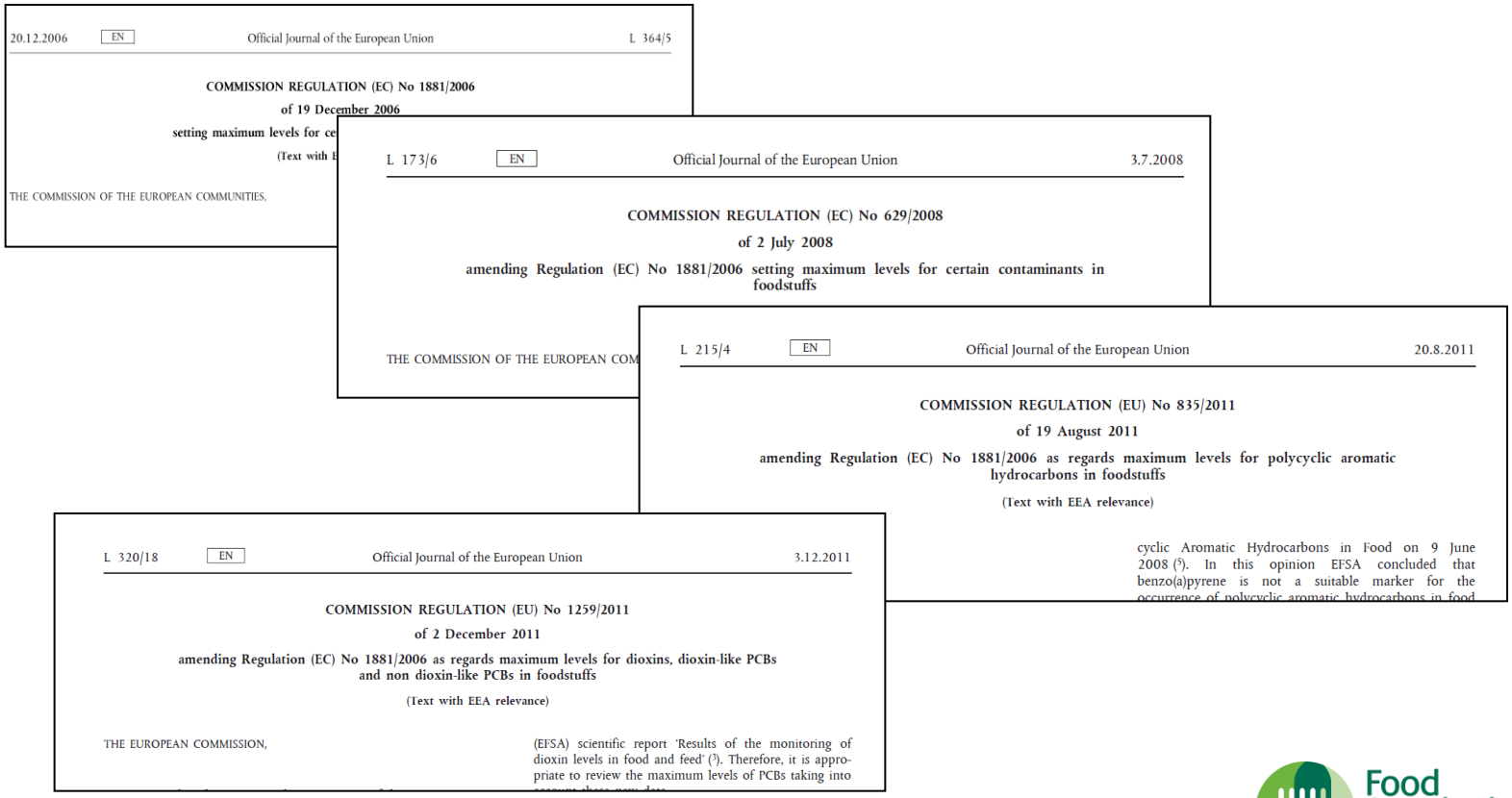
Descriptor 9 Criterion

Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards



20.12.2006 EN Official Journal of the European Union L 364/5

COMMISSION REGULATION (EC) No 1881/2006

of 19 December 2006

setting maximum levels for ce

(Text with E

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

L 173/6 EN Official Journal of the European Union 3.7.2008

COMMISSION REGULATION (EC) No 629/2008

of 2 July 2008

amending Regulation (EC) No 1881/2006 setting maximum levels for certain contaminants in foodstuffs

THE COMMISSION OF THE EUROPEAN COM

L 215/4 EN Official Journal of the European Union 20.8.2011

COMMISSION REGULATION (EU) No 835/2011

of 19 August 2011

amending Regulation (EC) No 1881/2006 as regards maximum levels for polycyclic aromatic hydrocarbons in foodstuffs

(Text with EEA relevance)

cyclic Aromatic Hydrocarbons in Food on 9 June 2008 (5). In this opinion EFSA concluded that benzo(a)pyrene is not a suitable marker for the occurrence of polycyclic aromatic hydrocarbons in food

L 320/18 EN Official Journal of the European Union 3.12.2011

COMMISSION REGULATION (EU) No 1259/2011

of 2 December 2011

amending Regulation (EC) No 1881/2006 as regards maximum levels for dioxins, dioxin-like PCBs and non dioxin-like PCBs in foodstuffs

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

(EFSA) scientific report 'Results of the monitoring of dioxin levels in food and feed' (3). Therefore, it is appropriate to review the maximum levels of PCBs taking into

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Stockholm Convention

ORIGINAL COMPOUNDS (2004)	NEW COMPOUNDS (2009)	NEW COMPOUNDS (2014)	CANDIDATE COMPOUNDS
Aldrin	α-Hexachlorocyclohexane (α-HCH)	Hexabromocyclododecane (HBCDD)	Polychlorinated naphthalenes (PCNs)
Chlordane	β-Hexachlorocyclohexane (β-HCH)		Pentachlorophenol (PCP)
DDT	Chlordecone		Hexachlorobutadiene (HCBD)
Dieldrin	Hexabromobiphenyl (HxBP)		Short chain chlorinated paraffins (SCCP)
Endrin	Hexa- & hepta-bromodiphenyl ether (HxBDE / HpBDE)		
Heptachlor	Lindane (γ-HCH)		
Hexachlorobenzene	Pentachlorobenzene		
Mirex	Tetra- & penta-bromodiphenyl ether		
Polychlorinated biphenyls (PCBs)	Perfluorooctanesulphonic acid (PFOS), its salts and perfluorooctanesulphonyl fluoride (PFOSF)		
Dioxins (PCDDs)			
Furans (PCDFs)			
Toxaphene			

Currently monitored by PRFC / CRD

Already under investigation by FSA

New investigations by FSA

Not currently included in any programme

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Marine survey (2-year project)

Objectives:

- Assess emerging risks associated with seafood consumption
- Identify any localised contamination hotspots
- Establish baseline data for MSFD D9
- Make a comparison with previous data
- Evaluate effectiveness of targeted approach

Sampling: samples collected from known locations by Cefas, MS, DoENI, NRW plus samples from Billingsgate market.

Target species: sardines/pilchards, sea bass, dogfish, mackerel, herring (also sprats, halibut, turbot, grey mullet)

Target determinands: all regulated and previously investigated POPs; heavy metals and arsenic; emerging POPs later

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Results summary: sea bass, mackerel, sardines

		WHO-TEQ	ICES6	BDE-47	BDE-49	BDE-99	BDE-100	BDE 154	PCN 52	PCN 53	PCN 66/67	PCN 68	PCN 69	PCN 71/72	PCN 73
		ng/kg	µg/kg	µg/kg					ng/kg						
Sea bass	Min	0.7	4.1	0.29	0.05	0.00	0.06	0.02	14.2	0.49	0.73	0.15	0.16	0.30	0.02
	Mean	2.8	24.5	1.24	0.23	0.01	0.28	0.11	24.3	2.60	1.49	0.63	0.66	1.47	0.09
	Max	12.5	144.9	3.38	0.54	0.03	0.75	0.28	33.3	10.8	2.44	2.03	2.28	5.29	0.17
Mackerel	Min	0.3	2.1	0.10	0.03	0.03	0.02	0.03	8.44	0.77	0.31	0.18	0.12	0.20	0.03
	Mean	1.3	9.7	0.50	0.18	0.13	0.16	0.09	27.7	2.15	2.32	0.89	0.90	1.27	0.19
	Max	7.5	63.6	1.53	0.73	0.35	0.50	0.20	64.5	4.51	6.24	2.27	2.40	3.35	0.35
Sardines	Min	1.0	8.2	0.11	0.03	0.01	0.04	0.00	3.65	0.18	0.58	0.13	0.17	0.17	0.11
	Mean	2.2	18.5	0.21	0.08	0.02	0.07	0.01	16.4	0.62	1.44	0.37	0.62	0.79	0.25
	Max	4.4	54.9	0.69	0.32	0.05	0.19	0.05	47.5	2.13	4.63	1.33	2.27	3.80	0.77

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Results summary: herring, sprats, grey mullet

		WHO-TEQ	ICES6	BDE-47	BDE-49	BDE-99	BDE-100	BDE 154	PCN 52	PCN 53	PCN 66/67	PCN 68	PCN 69	PCN 71/72	PCN 73
		ng/kg	µg/kg	µg/kg					ng/kg						
Herring	Min	0.65	4.31	0.35	0.18	0.03	0.12	0.03	13.90	1.19	1.32	0.62	0.62	0.42	0.20
	Mean	1.60	9.19	1.29	0.64	0.29	0.39	0.13	28.35	4.84	4.37	2.30	1.85	1.51	0.83
	Max	2.78	16.2	2.92	1.38	0.88	0.87	0.33	52.80	11.90	9.66	5.40	3.90	3.27	2.00
Sprats	Min	1.97	10.6	0.36	0.18	0.06	0.09	0.02	23.1	1.44	1.61	0.72	0.82	0.58	0.52
	Mean	2.61	14.6	0.52	0.26	0.09	0.13	0.04	29.2	2.88	3.42	1.57	1.52	1.44	1.05
	Max	3.54	18.2	0.79	0.38	0.14	0.19	0.09	33.1	3.92	4.71	2.32	1.94	2.19	1.75
Grey mullet	Min	0.18	2.77	0.05	0.004	0.001	0.01	0.01	3.12	0.43	0.08	0.18	0.14	0.25	0.03
	Mean	0.77	15.7	0.79	0.08	0.003	0.16	0.10	11.45	1.71	0.71	1.05	0.86	0.93	0.10
	Max	2.36	43.8	3.77	0.25	0.01	0.84	0.39	22.39	4.24	1.18	1.89	1.60	2.22	0.14

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Individual results - sardines

	WHO-TEQ	ICES6	BDE-47	BDE-49	BDE-99	BDE-100	BDE 154	PCN 52	PCN 53	PCN 66/67	PCN 68	PCN 69	PCN 71/72	PCN 73
Location	ng/kg	µg/kg	µg/kg					ng/kg						
Cornwall	1.04	9.65	0.142	0.035	0.007	0.058	0.016	5.41	0.18	0.60	0.13	0.27	0.27	0.11
Atlantic	1.30	13.8	0.150	0.044	0.016	0.052	0.013	3.86	<0.24	0.65	0.13	0.17	0.17	0.12
Cornwall	1.46	10.9	0.181	0.078	0.020	0.057	0.011	18.1	0.50	0.83	0.28	0.34	0.26	0.20
Cornwall	1.49	10.3	0.160	0.059	0.022	0.047	0.008							
Cornwall	1.53	8.20	0.162	0.071	0.021	0.052	0.010	19.3	0.49	1.12	0.27	0.40	0.31	0.19
Atlantic	1.68	17.8	0.107	0.031	0.009	0.038	0.011	6.49	0.27	1.12	0.31	0.44	0.39	0.15
Cornwall	2.09	15.3	0.203	0.065	0.032	0.075	0.016	19.3	0.71	1.26	0.36	0.57	0.63	0.24
Atlantic	2.20	15.8	0.145	0.058	0.017	0.042	0.008							
Cornwall	3.53	27.0	0.317	0.104	0.019	0.103	0.010	24.0	0.49	2.13	0.35	0.77	0.72	0.40
Boulogne	3.92	54.9	0.111	0.026	0.005	0.056	0.004	3.65	0.23	0.58	0.20	0.39	0.59	0.11
Dorset	4.37	19.4	0.686	0.320	0.052	0.189	0.046	47.5	2.13	4.63	1.33	2.27	3.80	0.77

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2003 – 2013 comparison

	Year	Dioxin	PCB	TEQ	ICES 6	BDE-47	BDE-49	BDE-99	BDE-100	BDE 154
		WHO-TEQ (2006) ng/kg			µg/kg	µg/kg				
Herring	2003	1.2	1.8	3.0	20.1	2.11	0.85	0.34	0.47	0.1
	2013	0.8	0.8	1.6	9.2	1.29	0.64	0.29	0.39	0.13
Mackerel	2003	0.4	1.2	1.6	13.8	0.95	0.28	0.36	0.23	0.09
	2013	0.3	1.0	1.2	9.7	0.5	0.18	0.13	0.16	0.09
Sardine	2003	0.9	4.0	4.9	47.2	0.74	0.19	0.06	0.2	0.03
	2013	0.5	1.8	2.2	18.5	0.21	0.08	0.02	0.07	0.01
Sea bass (wild)	2003	0.6	2.5	3.1	25.1	1.01	0.25	0.01	0.16	0.05
	2013	0.4	2.3	2.8	24.5	1.24	0.23	0.01	0.28	0.11
Sprat	2003	1.5	2.2	3.6	20.9	2.22	0.93	0.43	0.45	0.08
	2013	1.0	1.6	2.6	14.6	0.52	0.26	0.09	0.13	0.04

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Next steps / future

- Complete data collection and conduct review
- Identify any sampling gaps
- Consider measures needed to meet GES
- Remain alert for regulatory changes

- Analyse new Stockholm compounds
  - Pentachlorobenzene (listed 2009)
  - Hexachlorobutadiene (candidate)
  - Pentachlorophenol (candidate – dioxin source)
  - Short chain chlorinated paraffins (complex analysis)

Future

- Novel BFRs
- Organophosphorus flame retardants
- Dechloranes
- Nanomaterials
- Microplastics

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Thank you

Questions?

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