ENVIRONMENTAL QUALITY STANDARDS

HAZARDOUS POLLUTANTS

Priority substances (PS) are harmful substances. Priority hazardous substances (PHS) are a subset of these and are considered extremely harmful. Many priority and priority hazardous substances were previously categorised as “List 1” substances in the DSD. The EQSs for priority and priority hazardous substances are set by Europe through the EQSD, a daughter Directive of WFD which may also be referred to as the Priority Substances Directive.

Specific pollutants (SP) are those pollutants which are released in significant quantities into water bodies in each individual European Member State. Member States are required to set their own EQSs for these substances to achieve “good ecological status”. Many specific pollutants were previously categorised as “List 2” under the DSD. Specific pollutants are identified by an indicative list under Annex 8 of the WFD.

Other pollutants (OP) There are eight “other pollutants” which were included in List 1 of the DSD but are not included in the categories above. However, EQSs for these substances are included in the EQSD.

Other substances There were 12 “other substances” which were listed in Part 6 of “The River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010”. These standards were not carried forward by the 2015 Directions, but are now listed as operational standards.

Table 1 - Priority Hazardous Substances (PHS), Priority Substances (PS) and Other Pollutants (OP)

Note: The EQSs values for most substances are expressed as total concentrations in the whole water sample. However, the EQSs for metals refers to dissolved concentrations, i.e. the dissolved fraction of a water sample obtained by filtration through a 0.45 µm filter or any equivalent pre-treatment, or the bioavailable concentration. EQS may be revised over time, due to new legislation or new scientific information. The Regulators will update the data in this guidance from time to time, and the Operator should ensure that they use the most up to date of these benchmarks.

		Inland Surface Waters(ii)			**Other Surface Waters (TraC Waters)**			
No	**Name of substance**	**AA-EQS (i) µg/l**	**MAC-EQS (iii) µg/l**		**AA-EQS (i) µg/l**	**MAC-EQS (iii) µg/l**	Biota standards	**Category**
1	Alachlor	0.3	0.7		0.3	0.7		**PS**
2	Anthracene	0.1	0.1		0.1	0.1		**PHS**
3	Atrazine	0.6	2.0		0.6	2.0		**PS**
4	Benzene	10	50		8	50		**PS**
5	Brominated diphenylethers(iv) (pBDE)		0.14			0.014	0.0085 µg/kg in fish	**PHS**

6	Cadmium and its compounds (depending on water hardness classes) (v) *Dissolved*	≤0.08(Class 1) 0.08 (Class 2) 0.09 (Class 3) 0.15 (Class 4) 0.25 (Class 5)	≤0.45(Class 1) 0.45 (Class 2) 0.6 (Class 3) 0.9 (Class 4) 1.5 (Class 5)		0.2			**PHS**
6a	Carbon tetrachloride (vi)	12			12			**OP**
7	C10-13 Chloroalkanes	0.4	1.4		0.4	1.4		**PHS**
8	Chlorfenvinpho s	0.1	0.3		0.1	0.3		**PS**
9	Chlorpyrifos (Chlorpyrifosethyl)	0.03	0.1		0.03	0.1		**PS**
9a	Cyclodiene pesticides: Aldrin (vi) Dieldrin (vi) Endrin (vi) Isodrin (vi)	∑ = 0.01			∑ = 0.005			**OP**

		Inland Surface Waters(ii)			**Other Surface Waters (TraC Waters)**			
No	**Name of substance**	**AA-EQS (i) µg/l**	**MAC-EQS (iii) µg/l**		**AA-EQS (i) µg/l**	**MAC-EQS (iii) µg/l**	Biota standards	**Category**
9b	DDT total (vi), (vii)	0.025			0.025			**OP**
	para-para-DDT (vi)	0.01			0.01			**OP**
10	1,2-Dichloroethane	10			10			**PS**
11	Dichloromethane	20			20			**PS**
12	Di(2ethylhexyl)phthalate (DEHP)	1.3			1.3			**PHS**
13	Diuron	0.2	1.8		0.2	1.8		**PS**
14	Endosulphan	0.005	0.01		0.0005	0.004		**PHS**
15	Fluoranthene	0.0063	0.12		0.0063	0.12	30 µg/kg in crustaceans or molluscs	**PS**
16	Hexachlorobenzene		0.05			0.05	10 µg/kg in fish	**PHS**

17	Hexachlorobutadiene		0.6			0.6	55 µg/kg in fish	**PHS**
18	Hexachlorocyclohexane	0.02	0.04		0.002	0.02		**PHS**
19	Isoproturon	0.3	1.0		0.3	1.0		**PS**
20	Lead and its compounds *Dissolved*	1.2 (bioavailable)	14		1.3	14		**PS**
21	Mercury and its compounds *Dissolved*		0.07			0.07	20 µg/kg In fish	**PHS**
22	Naphthalene	2	130		2	130		**PS**
23	Nickel and its compounds *Dissolved*	4 (bioavailable)	34		8.6	34		**PS**
24	Nonylphenol (4-Nonylphenol)	0.3	2.0		0.3	2.0		**PHS**
25	Octylphenol ((4-(1,1',3,3'-Tetramethylbutyl) - phenol))	0.1			0.01			**PS**
26	Pentachlorobenzene	0.007			0.0007			**PHS**
27	Pentachlorophenol	0.4	1		0.4	1		**PS**

		Inland Surface Waters[ii]			**Other Surface Waters (TraC Waters)**			
No	**Name of substance**	**AA-EQS [i] µg/l**	**MAC-EQS [iii] µg/l**		**AA-EQS [i] µg/l**	**MACEQS [iii] µg/l**	Biota standards	**Category**
28	Polyaromatic Hydrocarbons (PAH) (viii)							**PHS**
	Benzo(a)pyrene (BaP)	$1.7x10^{-4}$	0.27		$1.7x10^{-4}$	0.027	5 µg/kg BaP in crustaceans or molluscs	**PHS**
	Benzo(b)-fluoranthene		0.017			0.017		**PHS**
	Benzo(k)fluoranthene		0.017			0.017		**PHS**

	Benzo(g,h,i)perylene		$8.2x10^{-3}$			$8.2x10^{-4}$		**PHS**
	Indeno(1,2,3cd)-pyrene							**PHS**
29	Simazine	1	4		1	4		**PS**
29a	Tetrachloroethylene (vi)	10			10			**OP**
29b	Trichloro- ethylene (vi)	10			10			**OP**
30	Tributyltin compounds (Tributyltincation)	0.0002	0.0015		0.0002	0.0015		**PHS**
31	Trichlorobenzenes	0.4			0.4			**PS**
32	Tricholoromethane (chloroform)	2.5			2.5			**PS**
33	Trifluralin	0.03			0.03			**PHS**

Notes:

(i) This parameter is the annual average value of the Environmental Quality Standard expressed as the arithmetic mean of the concentrations measured at each representative monitoring point within the water body at different times during the year. Unless otherwise specified, it applies to the total concentration of all isomers.

(ii) Inland surface waters encompass rivers and lakes and related artificial or heavily modified water bodies.

(iii) This parameter is the Environmental Quality Standard expressed as a maximum allowable concentration (EQS – MAC). Where the MAC – EQS are marked as “not applicable”, the AA EQS values are considered protective against short-term pollution

peaks in continuous discharges since they are significantly lower than the values derived on the basis of acute toxicity.

(iv) The EQS is the sum of the concentrations of congener numbers 28, 47, 99, 100, 153, and 154.

Names for these congeners are respectively:

2,4,4'-tribromodiphenyl ether (PBDE28)
2,2',4,4'-tetrabromodiphenyl ether (PBDE47)
2,2',4,4',5-pentabromodiphenyl ether (PBDE99)
2,2',4,4',6-pentabromodiphenyl ether (PBDE100)
2,2',4,4',5,5'-hexabromodiphenyl ether (PBDE153)
2,2',4,4',5,6'-hexabromodiphenyl ether (PBDE154)

where PBDE stands for polybrominated diphenylether

For discharges containing one or more of these substances, the concentrations should be added together before assessing EQS compliance.

(v) For cadmium and its compounds (No.6) the EQS values vary dependent upon the hardness of the water as specified in five class categories (Class 1:<40mg CaCO3/l, Class 2: 40 to <50 mg CaCO3/l, Class 3: 50 to <100 mg CaCO3/l, Class 4: 100 to <200 mg CaCO3/l, Class 5 ≥200 mg CaCO3/l).

(vi) This substance is not a priority substance but one of the other pollutants for which the EQS are identical to those laid down in the legislation that applied prior to the entry into force of this Directive.

(vii) DDT total comprises the sum of the isomers 1,1,1 – trichloro-2,2 bis (p-chlorophenyl) ethane (CAS number 50-29-3; EU Number 200-024-3); 1,1,1-trichloro-2 (ochlorophenyl)-2-(p-chlorophenyl)ethane (CAS number 789-02-6; EU Number 212-3325); 1,1 –dichloro-2,2 bis (p chlorophenyl) ethylene (CAS number 72-55-9; EU Number 200-784-6); and 1,1 –dichloro-2,2 bis (p-chlorophenyl) ethane (CAS number 72 54-8; EU Number 200-783-0).

(viii) For the group of priority substances of polyaromatic hydrocarbons (PAH) (No 28), the biota EQS and corresponding AA-EQS in water refer to the concentration of benzo(a)pyrene, on the toxicity of which they are based. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water.

Table 2 - Specific pollutants and substances with operational EQSs

		Inland Surface Waters			Other Surface Waters (TraC Waters)		
	Name of substance	**AA-EQS µg/l**	**MAC-EQS µg/l**		**AA-EQS µg/l**	**MAC-EQS µg/l**	**Category**
1	**2-4-D (2-4 Dichlorophenoxyacetic acid)**	0.3	1.3 (95 percentile)		0.3	1.3 (95 percentile)	**Specific pollutant**
2	**2-4-dichlorophenol**	4.2	140 (95 percentile)		0.42	6 (95 percentile)	**Specific pollutant**
3	**3,4 dichloroaniline**	0.2	5.4 (95 percentile)		0.2	5.4 (95 percentile)	**Specific pollutant**
4	**4-chloro-3methyl-phenol**	40			40		**Operational**
5	**Abamectin**	0.01	0.03		0.003	0.01	**Operational**
6	**Ammonia (un-ionised)**				21		**Specific pollutant**
7	**Arsenic**	50			25		**Specific pollutant**
8	**Azinphos methyl (dissolved)**	0.01			0.01		**Operational** [i]
9	**Bentazone**	500			500		**Operational**
10	**Benzyl butyl phthalate**	7.5	51 (95 percentile)		0.75	10 (95 percentile)	**Specific pollutant**
11	**Biphenyl**	25			25		**Operational**
12	**Boron**	2000			7000		**Operational** [i]
13	**Bromine (total residual oxidant)**	2	5			10	**Operational**
	Bromoxynil	100	1000		100	1000	**Operational**
14							
15	**Carbendazim**	0.15	0.7				**Specific pollutant**
16	**Chloride**	250000					**Operational**
17	**Chlorine**	2 (total available)	5 (95 percentile conc of total available)			10 (95 percentile conc of total residual oxidant)	**Specific pollutant**

18	**Chloronitro Toluenes**	10			10		**Operational**
19	**2 – chlorophenol**	50			50		**Operational**
20	**3 – chlorophenol** **4 – chlorophenol** **Total & individual monochlorophenols**	50	250		50	250	**Operational**
21	**Chlorothalonil**	0.035	1.2				**Specific pollutant**
22	**Chlorotoluron**	2	20		2		**Operational**
23	**Chlorpropham**	10	40		10	40	**Operational**
24	**Chromium (III) (dissolved)** [iv]	4.7	32 (95 percentile)				**Specific pollutant**

		Inland Surface Waters			**Other Surface Waters (TraC Waters)**		
	Name of substance	**AA-EQS µg/l**	**MAC-EQS µg/l**		**AA-EQS µg/l**	**MAC-EQS µg/l**	**Category**
25	**Chromium (VI) (dissolved)** [iv]	3.4			0.6	32 (95 percentile)	**Specific pollutant**
26	**Cobalt (dissolved)**	3	100		3	100	**Operational**
27	**Copper (dissolved)**	1 µg/l bioavailable			3.76 µg/l dissolved, where DOC ≤1mg/l 3.76 + (2.677 x ((DOC/2) – 0.5)) µg/l dissolved, where DOC >1mg/l		**Specific pollutant**
28	**Coumaphos**	0.03	0.1		0.03	0.1	**Operational**
29	**Cyanide**	1	5 (95 percentile)		1	5 (95 percentile)	**Specific pollutant**
30	**Cyfluthrin**[ii]		0.001 (95 percentile)			0.001 (95 percentile)	**Operational** [i]
31	**Cypermethrin**	0.0001	0.0004 (95 percentile)		0.0001	0.0004 (95 percentile)	**Specific pollutant**[i]
32	**Demetons**	0.5			0.5		**Operational** [i]
33	**Diazinon**	0.01	0.02 (95 percentile)		0.01	0.26 (95 percentile)	**Specific pollutant**
34	**Dibutyl phthalate**	8	40		8	40	**Operational**
35	**Dichlorobenzene** **(Sum of all dichlorobenzene isomers)**	20	200		20	200	**Operational**
36	**Dichlorvos**	0.001			0.04	0.6	**Operational**[iii]
37	**Diethyl phthalate**	200	1000		200	1000	**Operational**
38	**Diflubenzuron**	0.001	0.015		0.005	0.1	**Operational**
39	**Dimethoate**	0.48	4 (95 percentile)		0.48	4 (95 percentile)	**Specific pollutant**
40	**Dimethyl phthalate**	800	4000		800	4000	**Operational**

41	**Dioctyl phthalate**	20	40		20	40	**Operational**
42	**Doramectin**	0.001	0.01		0.001	0.1	**Operational**
43	**EDTA**	400	4000		400	4000	**Operational**
44	**Fenchlorphos**	0.03	0.1		0.03	0.1	**Operational**
45	**Fenitrothion**	0.01			0.01		**Operational**
46	**Flucofuron[ii]**		1 (95 percentile)			1 (95 percentile)	**Operational [i]**
47	**Fluoride (dissolved)**	1000 (<50mg/l $CaCO_3$) 5000 (>50mg/l $CaCO_3$)	3000 (<50mg/l $CaCO_3$) 15000 (>50mg/l $CaCO_3$)		5000	15000	**Operational**
48	**Formaldehyde**	5	50				**Operational**
49	**Glyphosate**	196	398 (95 percentile)		196	398 (95 percentile)	**Specific pollutant**
50	**Hydrogen sulphide**	0.25	1.0			10	**Operational**

		Inland Surface Waters			**Other Surface Waters (TraC Waters)**		
	Name of substance	**AA-EQS µg/l**	**MAC-EQS µg/l**		**AA-EQS µg/l**	**MAC-EQS µg/l**	**Category**
51	**Ioxynil**	10	100		10	100	**Operational**
52	**Iron (dissolved)**	1000			1000		**Specific pollutant**
53	**Ivermectin**	0.0001	0.001		0.001	0.01	**Operational**
54	**Linuron**	0.5	0.9 (95 percentile)		0.5	0.9 (95 percentile)	**Specific pollutant**
55	**Malachite green**	0.5	100		0.5	100	**Operational**
56	**Malathion**	0.01			0.02		**Operational**
	Mancozeb	2	20		2	20	**Operational**
57	**Maneb**	3	30		3	30	**Operational**
58	**Manganese**	123 µg/l bioavailable					**Specific pollutant**
59	**MCPA**	12 (pH<7) 80 (pH>7)	80 (pH<7) 800 (pH>7)		80	800	**Operational**
60	**Mecoprop**	18	187 (95 percentile)		18	187 (95 percentile)	**Specific pollutant**
61	**Methiocarb**	0.01	0.77 (95 percentile)				**Specific pollutant**
62	**Mevinphos**		0.02				**Operational [i]**
63	**Nitrilotriacetic acid (NTA)**	1000	10000		3000	30000	**Operational**
64	**Omethoate**	0.01					**Operational [i]**
65	**PCSDs[ii]**		0.05 (95 percentile)			0.05 (95 percentile)	**Operational [i]**
66	**Pendimethalin**	0.3	0.58 (95 percentile)				**Specific pollutant**
67	**Permethrin**	0.001	0.01 (95 percentile)		0.0002	0.001 (95 percentile)	**Specific pollutant**
68	**pH**		6-9 (95 percentile)			6-8.5 (95 percentile)	**Operational**
69	**Phenol**	7.7	46 (95 percentile)		7.7	46 (95 percentile)	**Specific pollutant**

70	**Pirimicarb**	1	5		1	5	**Operational**
71	**Pirimiphosmethyl**	0.015	0.05		0.015	0.05	**Operational**
72	**Prochloraz**	4	40		4	40	**Operational**
73	**Propetamphos**	0.03	0.1		0.03	0.1	**Operational**
74	**Propyzamide**	100	1000		100	1000	**Operational**
75	**Silver (dissolved)**	0.05	0.1		0.5	1	**Operational**
76	**Sulcofuron**[ii]		25 (95 percentile)			25 (95 percentile)	**Operational** [i]
77	**Sulphate**	400,000					**Operational**
	Styrene	50	500		50	500	**Operational**
78	**Tecnazene (total)**	1	10		1	10	**Operational**
79	**Tetrachloroethane**	140	1848 (95 percentile)				**Specific pollutant**
80	**Thiabendazole**	5	50		5	50	**Operational**
81	**Tin (inorganic)**	25 (total)			10 (dissolved)		**Operational**
82	**Toluene**	74	380 (95 percentile)		74	370 (95 percentile)	**Specific pollutant**

		Inland Surface Waters			**Other Surface Waters (TraC Waters)**		
	Name of substance	**AA-EQS µg/l**	**MAC-EQS µg/l**		**AA-EQS µg/l**	**MAC-EQS µg/l**	**Category**
83	**Total anions**	250,000					**Operational**
84	**Triallate**	0.25	5		0.25	5	**Operational**
85	**Triazaphos**	0.005			0.005		**Operational** [i]
86	**Tributyl phosphate**	50	500		50	500	**Operational**
87	**1,1,1trichloroethane**	100			100		**Operational**
88	**Triclosan**	0.1	0.28 (95 percentile)		0.1	0.28 (95 percentile)	**Specific pollutant**
89	**Triphenyltin and its derivatives**		0.02			0.008	**Operational**
90	**1,1,2trichloroethane**	400			300		**Operational**
91	**Vanadium**	20 (0-200 mg/l $CaCO_3$) 60 (200+ mg/l $CaCO_3$)			100		**Operational** [i]
92	**Xylene**	30			30		**Operational**
93	**Zinc**	10.9 bioavailable plus Ambient Background Concentration (µg/l) dissolved [v]			6.8 dissolved plus Ambient Background Concentration (µg/l) [v]		**Specific pollutant**

Notes:

(i) These substances were classed as List 2 under the Dangerous Substances Directive but have not been classified under WFD/EQS. The EQSs for these substances should be treated as operational EQSs for the purposes of this guidance.

(ii) These five substances are mothproofing agents.

(iii) Cypermethrin and dichlorvos will be Priority Substances (with revised standards) from December 2018

(iv) The EQSs for Cr III and Cr VI can be summed (i.e. added together) to give an EQS for chromium if the proportions of CR III and Cr VI in a sample are not known.

(v) In respect of dissolved zinc, the Appropriate Agency must apply the Ambient Background concentration for freshwaters in Table 3 below. For saltwater, an Ambient Background Concentration of 1.1 µg/l is recommended. In order to assess compliance with the EQS for zinc, the relevant ambient background concentration is subtracted from the measured dissolved concentration.