APPENDIX PART E: SUBSTANCES AND NEW CRITERIA TO WATCH

Chapter 2: TBT emissions inside the port of Rotterdam

2.2a Port of Rotterdam: Definition of environmental variables, harbour layout and hydrological parameters

Parameter	Symbol	Unit	Port of Rotterdam (1)	Port of Rotterdam (2)
Water quality				
Silt concentration	C_{pm}	mg/L	35	35
Temperature	T	^{o}C	15	15
Salinity	S	$^{o}/_{oo}$	30	30
Part. Matt. Org-C	POC	mg/L	1	1
pH	pH		8.0	8.0
Background concentration	C	mg/L	0	0
Hydrology				
Tidal period		hour	12.41	12.41
Tidal height		m	1.5	1.5
Tidal current	F	m/s		
River flow velocity	F_{riv}	m/s	1.5	1.5
River width	y_2	m	500	500
Depth of river		m	20	20
Density difference		kg/m^3	0.8	0.8
Flush in harbour	F	m/s	0	0
Density difference of flush		kg/m^3	0	0
Harbour lay-out				
Distance from mouth	X1	m	2000	2000
Length	X2	m	20000	20000
Width	Y1	m	2000	2000
Depth of harbour		m	20	20
Harbour entrance width	X3	m	5000	10000
Harbour entrance depth		m	20	20
Height dam harbour entr.		m	0	0
Width dam harbour entr.		m	0	0
Calculated water exchange per tidal period		%	32	65

2.2b Compound property input data [1]

Compound			Irgarol-1051 [2]	Seanine-211[3]	Copper	TBT[4]	Zinc-pyrithione
Parameter	Symbol	Unit					
Compound class	CmpIsType		3	3	2	3	3
Molecular mass	CmpMolmass	g/mol	253.37	282	63.5	290.04	317.7
Vapour pressure [5]	CmpVappress	Pa	8.8E-05	4.5E-06	0	8.5E-05	1E-06
Solubility [5]	CmpSol	g/m^3	7	4.7	0.001	1.9	6
Octanol-water partitioning coefficient	CmpKow	-	2.8	2.85	0	3.8	0.93
Sediment-water distribution coefficient	CmpKd	m^3/kg	-	-	30	-	-
Organic carbon adsorption coefficient	CmpKoc	L/kg oc	3.1	2	0	4.6	3.0
Henry's constant [5]	CmpH	$Pa.m^3/mol$	0.00319	6E-09	0	0.02	5E-05
Melting point	CmpTmelt	^oC	130	41	0	0	260
Acid dissociation constant pKa	CmppKa	-	5.16	14	0	0	14
Biotic degradation rate constant (water)[5]	CmpDegr Biowater	day^{-1}	0.028	16.5	0	0.041	2.08
Hydrolysis rate contant (water)[5]	CmpDegr Hydwater	day^{-1}	0	0.05	0	0	0.054
Photolysis rate constant (water)[5]	CmpDegrPhot	day^{-1}	0	0	0	0	8.3 [6]
Sediment biotic degradation [5]	CmpDegrBioSed	day^{-1}	0.028	16.5	0	0.0014	7.9
Sediment abiotic degradation rate constant [5]	CmpDegrHydSed	day^{-1}	0	0	0	0	0

[1] values provided by participants of CEPE-AWG (Van Hattum et al, 1999)

[2] derived form CIBA (1995)

[3] based on Willingham and Jacobsen (1996)

[4] according to Evers et al., (1995) and Stronkhorst *et al.* (1996).

[5] at 20 ^oC

[6] average over 3 meter water column (154 W/m^2; attn. 1.74).