Appendix A: Occurrence data, toxicity thresholds, and risk quotients for key CEC classes in California waters

Table A.1: Occurrence data, toxicity thresholds, and risk quotients for alkylphenols and alkylphenol ethoxylates in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	4-Nonylphenol	Total	162	2	0.0021 - 1.6	0.37	0.073	0.61	0.57	0.61	0.65
Estuarine Water	4-Octylphenol	Total	11	0	0.02 - 0.2	0.02	0	0.1		0.20	
Estuarine Water	4-tert-Octylphenol	Dissolved	13	0	0.2 - 0.2	0.2	0	0.632		0.32	
Estuarine Water	4-tert-Octylphenol	Total	11	0	0.4 - 0.4	0.4	0	0.632		0.63	
Estuarine Water	4-tert-Octylphenol diethoxylate (OP2EO)	Dissolved	13	0	0.1 - 0.1	0.1	0				
Estuarine Water	4-tert-Octylphenol diethoxylate (OP2EO)	Total	11	0	0.2 - 0.5	0.2	0				
Estuarine Water	Nonylphenol diethoxylate (NP2EO)	Dissolved	13	0	0.8 - 0.8	0.8	0				
Estuarine Water	Nonylphenol diethoxylate (NP2EO)	Total	16	0	0.0051 - 3.2	1.6	0				
Estuarine Water	Nonylphenol monoethoxylate (NP1EO)	Dissolved	13	0	0.8 - 0.8	0.8	0				
Estuarine Water	Nonylphenol monoethoxylate (NP1EO)	Total	16	0	0.0027 - 1.6	1.6	0				
Estuarine Water	Octylphenol ethoxylate (OPnEO)	Dissolved	13	0	0.3 - 0.3	0.3	0				
Freshwater	4-Nonylphenol	Dissolved	9	0	1 - 5	2	0	0.61	0.57	3.3	
Freshwater	4-Nonylphenol	Total	1	0	1300 - 1335	1300	0	0.61	0.57	2131.1	2280.7
Freshwater	4-Nonylphenol	Total	57	2	0.37 - 1.6	0.37	0.3	0.61	0.57	0.61	
Freshwater	4-Octylphenol	Dissolved	13	0	0.06 - 1	0.16	0	0.1		1.6	
Freshwater	4-Octylphenol	Total	1	0	89 - 89	89	0	0.1	0.012	890.0	7416.7
Freshwater	4-Octylphenol	Total	40	0	0.02 - 50	50	0	0.1		500	
Freshwater	4-tert-Octylphenol	Dissolved	14	0	0.1 - 1.4	1	0	0.632		1.6	
Freshwater	4-tert-Octylphenol	Total	1	0	89 - 89	89	0	0.632	0.632	140.8	140.8
Freshwater	4-tert-Octylphenol	Total	40	2	0.4 - 50	50	0.2	0.632		79	
Freshwater	4-tert-Octylphenol diethoxylate (OP2EO)	Dissolved	12	8	1 - 1	1	0.1				
Freshwater	4-tert-Octylphenol diethoxylate (OP2EO)	Total	1	0	89 - 89	89	0	0.8	0.8	111.3	111.3
Freshwater	4-tert-Octylphenol diethoxylate (OP2EO)	Total	13	8	0.2 - 0.32	0.32	0.2				
Freshwater	nonylphenol (mixed isomers)	Total	233	17	0.5 - 50	0.5	8.7				
Freshwater	Nonylphenol diethoxylate (NP2EO)	Dissolved	13	8	5 - 5	5	0.4				
Freshwater	Nonylphenol diethoxylate (NP2EO)	Total	1	0	1800 - 1780	1800	0	0.37		4864.9	
Freshwater	Nonylphenol diethoxylate (NP2EO)	Total	7	29	1.6 - 1.6	1.6	1.3				
Freshwater	Nonylphenol ethoxylate (NPnEO)	Total	201	5	0.5 - 0.5	0.5	3.8				
Freshwater	Nonylphenol monoethoxylate (NP1EO)	Total	1	0	890 - 890	890	0	0.64		1390.6	
Freshwater	Nonylphenol monoethoxylate (NP1EO)	Total	7	14	1.6 - 1.6	1.6	0.53				
Marine Water	4-Nonylphenol	Total	6	17	1.6 - 1.6	1.6	0.1	0.61	0.57	2.6	2.8
Marine Water	4-Octylphenol	Total	6	0	0.2 - 0.2	0.2	0	0.1		2.0	
Marine Water	4-tert-Octylphenol	Total	6	17	0.4 - 0.4	0.4	0.2	0.632		0.63	
Marine Water	4-tert-Octylphenol diethoxylate (OP2EO)	Total	15	7	0.32 - 0.5	0.32	0.1				
Marine Water	Nonylphenol diethoxylate (NP2EO)	Total	6	0	3.2 - 3.2	3.2	0				
Marine Water	Nonylphenol monoethoxylate (NP1EO)	Total	6	0	1.6 - 1.6	1.6	0				

Table A.2: Occurrence data, toxicity thresholds, and risk quotients for bisphenols in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	Bisphenol A	Dissolved	49	35	7e-04 - 1.14	0.02	0.0088	0.06	0.06	0.33	0.33
Estuarine Water	Bisphenol A	Total	16	6	0.04 - 2.47	0.04	0.05	0.06	0.06	0.67	0.67
Estuarine Water	Bisphenol A bis(diphenyl phosphate)	Dissolved	22	0	5e-04 - 5e-04	0.0005	0	0.06	0.06	0.0083	0.0083
Estuarine Water	Bisphenol AF	Dissolved	22	0	8e-04 - 8e-04	0.0008	0	0.06	0.06	0.013	0.013
Estuarine Water	Bisphenol AP	Dissolved	22	0	7e-04 - 7e-04	0.0007	0	0.06	0.06	0.012	0.012
Estuarine Water	Bisphenol B	Dissolved	22	0	8e-04 - 8e-04	0.0008	0	0.06	0.06	0.013	0.013
Estuarine Water	Bisphenol BP	Dissolved	22	0	8e-04 - 8e-04	0.0008	0	0.06	0.06	0.013	0.013
Estuarine Water	Bisphenol C	Dissolved	22	0	7e-04 - 7e-04	0.0007	0	0.06	0.06	0.012	0.012
Estuarine Water	Bisphenol E	Dissolved	22	0	8e-04 - 8e-04	0.0008	0	0.06	0.06	0.013	0.013
Estuarine Water	Bisphenol F	Dissolved	22	73	8e-04 - 8e-04	0.081	0.15	0.06	0.06	1.4	1.4
Estuarine Water	Bisphenol G	Dissolved	22	0	0.001 - 0.001	0.001	0	0.06	0.06	0.017	0.017
Estuarine Water	Bisphenol M	Dissolved	22	0	9e-04 - 9e-04	0.0009	0	0.06	0.06	0.015	0.015
Estuarine Water	Bisphenol P	Dissolved	22	0	0.001 - 0.001	0.001	0	0.06	0.06	0.017	0.017
Estuarine Water	Bisphenol PH	Dissolved	22	0	7e-04 - 7e-04	0.0007	0	0.06	0.06	0.012	0.012
Estuarine Water	Bisphenol S	Dissolved	22	32	0.001 - 0.001	0.014	0.12	0.06	0.06	0.23	0.23
Estuarine Water	Bisphenol TMC	Dissolved	22	0	0.0011 - 0.0011	0.0011	0	0.06	0.06	0.018	0.018
Estuarine Water	Bisphenol Z	Dissolved	22	0	0.0014 - 0.0014	0.0014	0	0.06	0.06	0.023	0.023
Freshwater	Bisphenol A	Dissolved	3	67	NA	0.015	0.015	0.06	0.06	0.25	0.25
Freshwater	Bisphenol A	Total	49	2	0.04 - 100	50	0.14	0.06	0.06	833	833
Marine Water	Bisphenol A	Total	6	50	0.4 - 0.4	0.4	0.03	0.06	0.06	7	6.7

Table A.3: Occurrence data, toxicity thresholds, and risk quotients for organophosphate esters in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	2-Ethylhexyl diphenyl phosphate	Dissolved	48	40	4e-04 - 4e-04	0.035	0.05	0.018	0.018	1.9	1.9
Estuarine Water	Bisphenol A bis(diphenyl phosphate)	Dissolved	22	0	5e-04 - 5e-04	0.0005	0	0.011	0.0011	0.045	0.45
Estuarine Water	Tri-n-butyl phosphate	Dissolved	61	97	2e-04 - 0.032	0.11	0.22	61.85	61.85	0.0018	0.0018
Estuarine Water	Tri-n-butyl phosphate	Total	11	73	0.064 - 0.2	0.064	0.023	61.85	61.85	0.0010	0.0010
Estuarine Water	Tricresyl phosphate (multiple isomers)	Dissolved	48	35	4e-04 - 4e-04	0.015	0.061	0.31	0.31	0.048	0.048
Estuarine Water	Triethyl phosphate	Dissolved	48	21	2e-04 - 2e-04	0.0032	0.015	632	63	0.0000051	0.000051
Estuarine Water	Triphenyl phosphate	Dissolved	61	79	4e-04 - 0.04	0.15	0.39	0.74	0.074	0.20	2.0
Estuarine Water	Triphenyl phosphate	Total	11	0	0.08 - 0.2	0.08	0	0.74	0.074	0.11	1.1
Estuarine Water	Tripropyl phosphate	Dissolved	48	10	4e-04 - 4e-04	0.0004	0.0039	2.32		0.0002	
Estuarine Water	Tris(1,3-dichloro-2-propyl) phosphate	Dissolved	61	87	4e-04 - 0.16	0.25	0.64	0.00046	0.00046	543	543
Estuarine Water	Tris(1,3-dichloro-2-propyl) phosphate	Total	11	27	0.2 - 0.32	0.32	0.09	0.00046	0.00046	696	696
Estuarine Water	Tris(2-butoxyethyl) phosphate	Dissolved	61	79	5e-04 - 0.32	2	3.7	24	2.4	0.083	0.83
Estuarine Water	Tris(2-butoxyethyl) phosphate	Total	11	0	0.2 - 0.64	0.64	0	24	2.4	0.027	0.27
Estuarine Water	Tris(2-chloroethyl) phosphate	Dissolved	61	87	4e-04 - 0.08	0.35	0.48	14.31	14.31	0.024	0.024
Estuarine Water	Tris(2-chloroethyl) phosphate	Total	11	27	0.16 - 0.2	0.16	0.05	14.31	14.31	0.011	0.011
Estuarine Water	Tris(2-chloroisopropyl) phosphate	Dissolved	48	100	4e-04 - 4e-04	2.9	3.3	59.16	59.16	0.049	0.049
Estuarine Water	Tris(2-ethylhexyl) phosphate	Dissolved	48	21	4e-04 - 4e-04	0.005	0.048	0.15	0.15	0.033	0.033
Estuarine Water	Tris(2-isopropylphenyl) phosphate	Dissolved	48	15	4e-04 - 4e-04	0.0023	0.0091				
Estuarine Water	Tris(2,3-dibromopropyl) phosphate	Dissolved	70	7	8e-04 - 8e-04	0.0008	0.044	0.14		0.0057	
Freshwater	Tri-n-butyl phosphate	Dissolved	14	43	0.16 - 0.5	0.2	0.05	61.85	61.85	0.0032	
Freshwater	Tri-n-butyl phosphate	Total	234	66	0.064 - 50	0.084	0.2	61.85	61.85	0.0014	
Freshwater	Triphenyl phosphate	Dissolved	14	57	0.1 - 0.5	0.14	0.03	0.74	0.074	0.19	
Freshwater	Triphenyl phosphate	Total	34	12	0.08 - 50	50	0.04	0.74	0.074	68	
Freshwater	Tris(1,3-dichloro-2-propyl) phosphate	Dissolved	17	53	0.12 - 0.5	0.17	0.49	0.00046	0.00046	370	
Freshwater	Tris(1,3-dichloro-2-propyl) phosphate	Total	24	12	0.32 - 50	50	0.23	0.00046	0.00046	108696	
Freshwater	Tris(2-butoxyethyl) phosphate	Dissolved	12	25	0.4 - 0.8	0.65	0.6	24	2.4	0.027	
Freshwater	Tris(2-butoxyethyl) phosphate	Total	22	14	0.64 - 50	50	0.8	24	2.4	2.1	
Freshwater	Tris(2-chloroethyl) phosphate	Dissolved	17	53	0.1 - 0.5	0.14	0.38	14.31	14.31	0.010	
Freshwater	Tris(2-chloroethyl) phosphate	Total	40	10	0.16 - 50	50	0.22	14.31	14.31	3.5	
Freshwater	Tris(2-chloroisopropyl) phosphate	Dissolved	3	100		0.051	0.051	59.16	59.16	0.00086	
Marine Water	Tri-n-butyl phosphate	Total	6	0	0.2 - 0.2	0.2	0	61.85	61.85		0.0032
Marine Water	Triphenyl phosphate	Total	6	0	0.2 - 0.2	0.2	0	0.74	0.074		2.7
Marine Water	Tris(1,3-dichloro-2-propyl) phosphate	Total	6	0	0.2 - 0.2	0.2	0	0.00046	0.00046		435
Marine Water	Tris(2-butoxyethyl) phosphate	Total	6	17	0.2 - 0.2	0.2	0.08	24	2.4		0.083
Marine Water	Tris(2-chloroethyl) phosphate	Total	6	0	0.2 - 0.2	0.2	0	14.31	14.31		0.014

Table A.4: Occurrence data, toxicity thresholds, and risk quotients for phthalates in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	Butyl benzyl phthalate	Total	20	0	0.7 - 20	9.2	0	7.5	0.75	1	12
Estuarine Water	Di-2-ethylhexyl phthalate	Dissolved	13	0	1 - 1	1	0	1.3	1.3	1	1
Estuarine Water	Di-2-ethylhexyl phthalate	Total	31	0	0.6 - 50	9.2	0	1.3	1.3	7	7
Estuarine Water	Di-n-octyl phthalate	Total	20	0	0.5 - 20	9.2	0				
Estuarine Water	Dibutyl phthalate	Total	20	0	0.6 - 50	9.2	0	10	1	1	9
Estuarine Water	Diethyl phthalate	Dissolved	13	8	0.2 - 0.2	0.2	0.05	12	1.2	0.017	0.17
Estuarine Water	Diethyl phthalate	Total	30	0	0.2 - 10	7.1	0	12	1.2	1	6
Estuarine Water	Dimethyl phthalate	Total	20	0	0.9 - 10	9.2	0	192	19	0	0
Freshwater	Butyl benzyl phthalate	Dissolved	4	0	NA		0	7.5	0.75		
Freshwater	Butyl benzyl phthalate	Total	279	61	0.005 - 2	0.18	10	7.5	0.75	0.024	
Freshwater	Di-2-ethylhexyl phthalate	Dissolved	4	0	NA		0	1.3	1.3		
Freshwater	Di-2-ethylhexyl phthalate	Total	1	0	440 - 445	440	0	1.3	1.3	338	
Freshwater	Di-2-ethylhexyl phthalate	Total	289	51	0.005 - 80	0.57	30	1.3	1.3	0.44	
Freshwater	Di-n-octyl phthalate	Dissolved	4	0	NA		0				
Freshwater	Di-n-octyl phthalate	Total	276	46	0.005 - 5	0.01	1				
Freshwater	Dibutyl phthalate	Dissolved	4	0	NA		0	10	1		
Freshwater	Dibutyl phthalate	Total	279	43	0.005 - 2.4	0.16	10	10	1	0.016	
Freshwater	Diethyl phthalate	Dissolved	4	0	NA		0	12	1.2		
Freshwater	Diethyl phthalate	Total	1	0	180 - 178	180	0	12	1.2	15	150
Freshwater	Diethyl phthalate	Total	286	36	0.005 - 2	0.11	2	12	1.2	0.0092	
Freshwater	Dimethyl phthalate	Dissolved	4	0	NA		0	192	19		
Freshwater	Dimethyl phthalate	Total	279	39	0.005 - 2	0.05	1	192	19	0.00026	
Marine Water	Butyl benzyl phthalate	Total	7	71	0.051 - 1.8	0.051	0.051	7.5	0.75		0.068
Marine Water	Di-2-ethylhexyl phthalate	Total	118	25	0.047 - 23	1	20	1.3	1.3		0.77
Marine Water	Di-n-octyl phthalate	Total	109	0	0.046 - 4.6	1	0				
Marine Water	Dibutyl phthalate	Total	109	6	0.077 - 1.6	1.5	0.39	10	1		1.5
Marine Water	Diethyl phthalate	Total	115	9	0.051 - 1.5	1.4	0.23	12	1.2		1.2
Marine Water	Dimethyl phthalate	Total	109	0	0.044 - 1.8	1.3	0	192	19	0	0

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	PBDE 003	Total	17	0	5 - 10	9.2	0	0.042	0.0002	219	46000
Estuarine Water	PBDE 007	Dissolved	36	100	1.4e-08 - 5.39e-07	0.0000034	0.0000042		0.0002		0.017
Estuarine Water	PBDE 007	Total	183	98	1.2e-08 - 1.02e-06	0.0000042	0.0000081		0.0002		0.021
Estuarine Water	PBDE 008	Dissolved	36	100	1e-08 - 4.1e-07	0.0000012	0.0000024		0.0002		0.0060
Estuarine Water	PBDE 008	Total	182	98	9.1e-09 - 8.35e-07	0.0000027	0.0000052		0.0002		0.014
Estuarine Water	PBDE 010	Dissolved	36	6	1.6e-08 - 5.87e-07	0.000000059	0.00000014		0.0002		0.00030
Estuarine Water	PBDE 010	Total	183	10	1.3e-08 - 1.17e-06	0.0000001	0.00000021		0.0002		0.00050
Estuarine Water	PBDE 012	Dissolved	30	70	1e-08 - 3.36e-07	0.00000015	0.00000057		0.0002		0.00075
Estuarine Water	PBDE 012	Total	183	80	7.5e-09 - 6.72e-06	0.00000035	0.0000011		0.0002		0.0018
Estuarine Water	PBDE 015	Dissolved	26	100	1e-08 - 2.81e-07	0.000001	0.0000014		0.0002		0.0050
Estuarine Water	PBDE 015	Total	172	100	6.5e-09 - 5.77e-07	0.0000024	0.0000034		0.0002		0.012
Estuarine Water	PBDE 017	Dissolved	35	100	1e-08 - 2.81e-07	0.000008	0.000011	0.046	0.046	0.00017	0.00017
Estuarine Water	PBDE 017	Total	181	100	7.3e-09 - 4.69e-07	0.000014	0.000025	0.046	0.046	0.00030	0.00030
Estuarine Water	PBDE 028	Dissolved	76	63	1e-08 - 2e-04	0.0000026	0.0053	0.046	0.046	0.000057	0.000057
Estuarine Water	PBDE 028	Total	177	99	7.2e-09 - 9.63e-07	0.0000043	0.0000067	0.046	0.046	0.000093	0.000093
Estuarine Water	PBDE 030	Dissolved	36	6	1e-08 - 3.06e-07	0.000000072	0.00000022	0.046	0.046	0.0000016	0.0000016
Estuarine Water	PBDE 030	Total	183	2	7.7e-09 - 4.68e-07	0.00000014	0.00000041	0.046	0.046	0.0000030	0.0000030
Estuarine Water	PBDE 032	Dissolved	34	29	1e-08 - 2.38e-07	0.00000013	0.00000038	0.046	0.046	0.0000028	0.0000028
Estuarine Water	PBDE 032	Total	183	37	6.2e-09 - 5.34e-07	0.00000018	0.00000059	0.046	0.046	0.0000039	0.0000039
Estuarine Water	PBDE 035	Dissolved	31	29	1e-08 - 1.8e-07	0.00000018	0.00000029	0.046	0.046	0.0000039	0.0000039
Estuarine Water	PBDE 035	Total	163	52	5.6e-09 - 8.83e-07	0.00000022	0.00000034	0.046	0.046	0.0000048	0.0000048
Estuarine Water	PBDE 037	Dissolved	29	45	1e-08 - 3.39e-07	0.00000014	0.00000025	0.046	0.046	0.0000030	0.0000030
Estuarine Water	PBDE 037	Total	134	65	5.5e-09 - 5.94e-07	0.00000027	0.00000053	0.046	0.046	0.0000059	0.0000059
Estuarine Water	PBDE 047	Dissolved	86	85	3.8e-09 - 0.02	0.003	0.0048	0.024	0.024	0.13	0.13
Estuarine Water	PBDE 047	Total	169	100	3.9e-09 - 5.35e-07	0.000079	0.00013	0.024	0.024	0.0033	0.0033
Estuarine Water	PBDE 049	Dissolved	72	76	5.6e-09 - 2e-04	0.0012	0.0039	0.024	0.024	0.050	0.050
Estuarine Water	PBDE 049	Total	183	99	4.9e-09 - 5.61e-06	0.0000098	0.000018	0.024	0.024	0.00041	0.00041
Estuarine Water	PBDE 051	Dissolved	31	97	1e-08 - 2.22e-07	0.00000081	0.0000012	0.024	0.024	0.000034	0.000034
Estuarine Water	PBDE 051	Total	183	96	2.6e-09 - 6.28e-07	0.0000017	0.0000025	0.024	0.024	0.000071	0.000071
Estuarine Water	PBDE 066	Dissolved	59	39	1e-08 - 2e-04	0.0002	0.0000014	0.024	0.024	0.0083	0.0083

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	PBDE 066	Total	156	92	6.4e-09 - 1.19e-06	0.0000025	0.0000037	0.024	0.024	0.00010	0.00010
Estuarine Water	PBDE 071	Dissolved	32	81	1e-08 - 3.09e-07	0.00000042	0.00000071	0.024	0.024	0.000018	0.000018
Estuarine Water	PBDE 071	Total	183	85	4.2e-09 - 9.47e-07	0.0000016	0.000003	0.024	0.024	0.000067	0.000067
Estuarine Water	PBDE 075	Dissolved	30	57	1e-08 - 1.93e-07	0.0000001	0.00000026	0.024	0.024	0.0000042	0.0000042
Estuarine Water	PBDE 075	Total	175	38	4.1e-09 - 6.6e-07	0.00000018	0.00000053	0.024	0.024	0.0000075	0.0000075
Estuarine Water	PBDE 077	Dissolved	36	17	4.4e-09 - 1.74e-07	0.000000021	0.00000014	0.024	0.024	0.00000088	0.00000088
Estuarine Water	PBDE 077	Total	183	8	3.7e-09 - 5.7e-07	0.000000049	0.00000011	0.024	0.024	0.0000020	0.0000020
Estuarine Water	PBDE 079	Dissolved	23	35	1e-08 - 3.24e-07	0.00000038	0.00000038	0.024	0.024	0.000016	0.000016
Estuarine Water	PBDE 079	Total	139	40	4.2e-09 - 1.31e-06	0.00000046	0.0000011	0.024	0.024	0.000019	0.000019
Estuarine Water	PBDE 085	Dissolved	59	37	2.9e-08 - 2e-04	0.0002	0.00000082	0.0002	0.0002	1.0	1.0
Estuarine Water	PBDE 085	Total	115	97	2.2e-08 - 8.24e-07	0.0000013	0.0000038	0.0002	0.0002	0.0065	0.0065
Estuarine Water	PBDE 099	Dissolved	47	70	2.9e-08 - 2e-04	0.0039	0.022	0.004	0.004	1.0	1.0
Estuarine Water	PBDE 099	Total	114	100	1.1e-08 - 6.54e-07	0.000042	0.000093	0.004	0.004	0.011	0.011
Estuarine Water	PBDE 100	Dissolved	57	44	1e-08 - 2e-04	0.0002	0.00033	0.0002	0.0002	1.0	1.0
Estuarine Water	PBDE 100	Total	143	100	6.9e-09 - 5.03e-07	0.000016	0.000026	0.0002	0.0002	0.080	0.080
Estuarine Water	PBDE 105	Dissolved	31	3	1.8e-08 - 4.04e-07	0.00000015	0.0000002	0.0002	0.0002	0.00075	0.00075
Estuarine Water	PBDE 105	Total	168	0	2.1e-08 - 9.95e-07	0.00000018	0	0.0002	0.0002	0.00090	0.00090
Estuarine Water	PBDE 116	Dissolved	30	20	3.3e-08 - 5.46e-07	0.00000021	0.00000026	0.0002	0.0002	0.0011	0.0011
Estuarine Water	PBDE 116	Total	183	7	2.9e-08 - 1.39e-06	0.00000024	0.00000057	0.0002	0.0002	0.0012	0.0012
Estuarine Water	PBDE 119	Dissolved	35	20	1.9e-08 - 2.97e-07	0.000000085	0.00000036	0.0002	0.0002	0.00043	0.00043
Estuarine Water	PBDE 119	Total	173	29	2e-08 - 9.36e-07	0.00000025	0.00000076	0.0002	0.0002	0.0013	0.0013
Estuarine Water	PBDE 126	Dissolved	36	6	1.1e-08 - 1.77e-07	0.00000005	0.00000015	0.0002	0.0002	0.00025	0.00025
Estuarine Water	PBDE 126	Total	165	6	1.5e-08 - 5.99e-07	0.000000086	0.000000096	0.0002	0.0002	0.00043	0.00043
Estuarine Water	PBDE 128	Dissolved	36	6	1e-08 - 1.58e-06	0.00000025	0.00000026	0.12	0.12	0.0000021	0.0000021
Estuarine Water	PBDE 128	Total	181	7	2e-08 - 1.71e-06	0.00000032	0.00000038	0.12	0.12	0.0000027	0.0000027
Estuarine Water	PBDE 138	Dissolved	64	12	1.5e-08 - 2e-04	0.0002	0.00000054	0.12	0.12	0.0017	0.0017
Estuarine Water	PBDE 138	Total	139	78	1e-08 - 5.96e-07	0.00000057	0.0000021	0.12	0.12	0.0000048	0.0000048
Estuarine Water	PBDE 140	Dissolved	29	24	1e-08 - 2.43e-07	0.000000094	0.00000026	0.12	0.12	0.00000078	0.00000078
Estuarine Water	PBDE 140	Total	150	45	1e-08 - 3.86e-07	0.00000021	0.00000088	0.12	0.12	0.0000018	0.0000018
Estuarine Water	PBDE 153	Dissolved	42	14	1.1e-08 - 2e-04	0.0002	0.0000014	0.12	0.12	0.0017	0.0017

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	PBDE 153	Total	112	96	4.5e-09 - 1.15e-06	0.0000048	0.0000095	0.12	0.12	0.000040	0.000040
Estuarine Water	PBDE 154	Dissolved	50	28	1e-08 - 2e-04	0.0002	0.0000013	0.12	0.12	0.0017	0.0017
Estuarine Water	PBDE 154	Total	133	100	2.3e-09 - 3.08e-07	0.0000051	0.0000066	0.12	0.12	0.000043	0.000043
Estuarine Water	PBDE 155	Dissolved	27	56	1e-08 - 1.59e-07	0.00000014	0.00000035	0.12	0.12	0.0000012	0.0000012
Estuarine Water	PBDE 155	Total	159	92	2.4e-09 - 2.93e-07	0.00000055	0.00000087	0.12	0.12	0.0000046	0.0000046
Estuarine Water	PBDE 181	Dissolved	36	6	1e-08 - 6.01e-07	0.000000076	0.00000022	0.017	0.017	0.0000045	0.0000045
Estuarine Water	PBDE 181	Total	183	8	6.2e-09 - 1.45e-06	0.0000002	0.00000069	0.017	0.017	0.000012	0.000012
Estuarine Water	PBDE 183	Dissolved	42	10	2.5e-08 - 2e-04	0.0002	0.0000032	0.017	0.017	0.012	0.012
Estuarine Water	PBDE 183	Total	75	81	6.8e-09 - 1.57e-06	0.000003	0.00009	0.017	0.017	0.00018	0.00018
Estuarine Water	PBDE 190	Dissolved	31	10	1.6e-08 - 1.11e-06	0.00000016	0.00000017	0.017	0.017	0.0000094	0.0000094
Estuarine Water	PBDE 190	Total	182	16	1.2e-08 - 2.51e-06	0.00000036	0.0000037	0.017	0.017	0.000021	0.000021
Estuarine Water	PBDE 196	Dissolved	36	0	3e-04 - 3e-04	0.0003	0	0.017	0.017	0.018	0.018
Estuarine Water	PBDE 197	Dissolved	45	20	1e-08 - 3e-04	0.0003	0.000012	0.017	0.017	0.018	0.018
Estuarine Water	PBDE 197	Total	40	90	1e-08 - 4.02e-06	0.000014	0.000032	0.017	0.017	0.00082	0.00082
Estuarine Water	PBDE 201	Dissolved	36	0	3e-04 - 3e-04	0.0003	0	0.017	0.017	0.018	0.018
Estuarine Water	PBDE 202	Dissolved	36	8	3e-04 - 3e-04	0.0003	0.0004	0.017	0.017	0.018	0.018
Estuarine Water	PBDE 203	Dissolved	44	16	5.3e-08 - 3e-04	0.0003	0.000028	0.017	0.017	0.018	0.018
Estuarine Water	PBDE 203	Total	40	95	1.6e-08 - 5.28e-06	0.0000053	0.00004	0.017	0.017	0.00031	0.00031
Estuarine Water	PBDE 205	Dissolved	20	0	1.3e-08 - 2.47e-06	0.00000022	0	0.017	0.017	0.000013	0.000013
Estuarine Water	PBDE 205	Total	95	4	2.3e-08 - 3.61e-06	0.00000038	0.00000046	0.017	0.017	0.000022	0.000022
Estuarine Water	PBDE 206	Dissolved	43	16	4.6e-08 - 3e-04	0.0003	0.000049	0.0011		0.27	
Estuarine Water	PBDE 206	Total	64	80	3.5e-08 - 1.09e-05	0.000044	0.000098	0.0011		0.040	
Estuarine Water	PBDE 207	Dissolved	51	27	3.9e-08 - 3e-04	0.0003	0.000043	0.0011		0.27	
Estuarine Water	PBDE 207	Total	42	100	3.5e-08 - 1.13e-06	0.000075	0.00012	0.0011		0.068	
Estuarine Water	PBDE 208	Dissolved	55	24	4.6e-08 - 3e-04	0.0003	0.0000052	0.0011		0.27	
Estuarine Water	PBDE 208	Total	60	82	4.1e-08 - 1.68e-05	0.000052	0.000072	0.0011		0.047	
Estuarine Water	PBDE 209	Dissolved	55	25	5.7e-07 - 8e-04	0.0008	0.0009	0.2		0.0040	
Estuarine Water	PBDE 209	Total	51	98	2.4e-07 - 7.42e-05	0.00038	0.00069	0.2		0.0019	
Freshwater	PBDE 003	Total	34	3	0.24 - 2.1	0.36	0.016	0.042	0.0002	8.6	
Freshwater	PBDE 007	Total	92	65	6e-08 - 5.39e-06	0.0000093	0.000065		0.0002		

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Freshwater	PBDE 008	Total	91	75	4.8e-08 - 3.95e-06	0.000012	0.00061		0.0002		
Freshwater	PBDE 010	Total	86	1	7.1e-08 - 6.4e-06	0.00000076	0.0000004		0.0002		
Freshwater	PBDE 012	Total	89	83	4.2e-08 - 3.4e-06	0.0000082	0.00075		0.0002		
Freshwater	PBDE 015	Total	91	99	3.1e-08 - 2.83e-06	0.000032	0.00043		0.0002		
Freshwater	PBDE 017	Total	182	62	1.4e-07 - 0.001	0.00025	0.0011	0.046	0.046	0.0054	
Freshwater	PBDE 025	Total	25	0	0.001 - 0.001	0.001	0	0.046	0.046	0.022	
Freshwater	PBDE 028	Total	182	58	1.1e-07 - 0.001	0.00026	0.002	0.046	0.046	0.0057	
Freshwater	PBDE 030	Total	177	3	1.4e-07 - 0.001	0.0000094	0.00025	0.046	0.046	0.00020	
Freshwater	PBDE 032	Total	91	9	1.2e-07 - 1.39e-05	0.0000019	0.000025	0.046	0.046	0.000041	
Freshwater	PBDE 033	Total	25	0	0.001 - 0.001	0.001	0	0.046	0.046	0.022	
Freshwater	PBDE 035	Total	92	67	8.6e-08 - 5.81e-05	0.00004	0.00042	0.046	0.046	0.00087	
Freshwater	PBDE 037	Total	85	89	7.8e-08 - 1.13e-05	0.000024	0.00052	0.046	0.046	0.00052	
Freshwater	PBDE 047	Total	182	80	1.9e-08 - 0.001	0.007	0.13	0.024	0.024	0.29	
Freshwater	PBDE 049	Total	172	66	2.4e-08 - 0.001	0.00042	0.003	0.024	0.024	0.018	
Freshwater	PBDE 051	Total	92	97	1.8e-08 - 9.17e-06	0.000055	0.00021	0.024	0.024	0.0023	
Freshwater	PBDE 066	Total	182	52	2.7e-08 - 0.001	0.00033	0.002	0.024	0.024	0.014	
Freshwater	PBDE 071	Total	102	84	2.6e-08 - 0.00017	0.000077	0.00035	0.024	0.024	0.0032	
Freshwater	PBDE 075	Total	90	92	2e-08 - 4.48e-05	0.000025	0.00008	0.024	0.024	0.0010	
Freshwater	PBDE 077	Total	87	71	1.4e-08 - 1.39e-05	0.0000068	0.00036	0.024	0.024	0.00028	
Freshwater	PBDE 079	Total	84	61	1.6e-08 - 4.5e-05	0.000054	0.00023	0.024	0.024	0.0023	
Freshwater	PBDE 085	Total	181	53	5.3e-07 - 0.00114	0.00045	0.01	0.0002	0.0002	2.3	
Freshwater	PBDE 099	Total	182	73	4.4e-07 - 0.00114	0.0094	0.2	0.004	0.004	2.4	
Freshwater	PBDE 100	Total	182	59	3.2e-07 - 0.00114	0.002	0.025	0.0002	0.0002	10.0	
Freshwater	PBDE 105	Total	92	5	7.1e-07 - 0.000117	0.000007	0.000081	0.0002	0.0002	0.035	
Freshwater	PBDE 116	Total	86	9	9.8e-07 - 0.000163	0.000011	0.00064	0.0002	0.0002	0.055	
Freshwater	PBDE 119	Total	91	84	6.7e-07 - 0.000104	0.000088	0.00041	0.0002	0.0002	0.44	
Freshwater	PBDE 126	Total	88	32	3.4e-07 - 6.9e-05	0.0000061	0.000058	0.0002	0.0002	0.031	
Freshwater	PBDE 128	Total	93	28	9e-07 - 0.000285	0.000031	0.00011	0.12	0.12	0.00026	
Freshwater	PBDE 138	Total	181	50	3.2e-07 - 0.00114	0.00016	0.002	0.12	0.12	0.0013	
Freshwater	PBDE 140	Total	90	90	2.2e-07 - 2.65e-05	0.000072	0.00033	0.12	0.12	0.00060	

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Freshwater	PBDE 153	Total	181	56	2.6e-07 - 0.00114	0.0013	0.015	0.12	0.12	0.011	
Freshwater	PBDE 154	Total	180	52	1.9e-07 - 0.00114	0.00084	0.013	0.12	0.12	0.0070	
Freshwater	PBDE 155	Total	92	97	1.8e-07 - 2.3129e-05	0.000085	0.00018	0.12	0.12	0.00071	
Freshwater	PBDE 179	Total	85	0	1e-04 - 0.00229	0.001	0	0.017	0.017	0.059	
Freshwater	PBDE 181	Total	91	47	6.8e-07 - 0.000176	0.00003	0.00024	0.017	0.017	0.0018	
Freshwater	PBDE 183	Total	166	46	4.7e-07 - 0.00229	0.00058	0.011	0.017	0.017	0.034	
Freshwater	PBDE 184	Total	85	0	1e-04 - 0.00229	0.001	0	0.017	0.017	0.059	
Freshwater	PBDE 188	Total	85	0	1e-04 - 0.00229	0.001	0	0.017	0.017	0.059	
Freshwater	PBDE 190	Total	162	30	9.7e-07 - 0.00229	0.00037	0.0016	0.017	0.017	0.022	
Freshwater	PBDE 197	Total	44	100	1.7e-06 - 0.000139	0.0011	0.0058	0.017	0.017	0.065	
Freshwater	PBDE 200	Total	85	1	1e-04 - 0.005	0.001	0.0048	0.017	0.017	0.059	
Freshwater	PBDE 201	Total	85	1	1e-04 - 0.005	0.001	0.0036	0.017	0.017	0.059	
Freshwater	PBDE 202	Total	85	1	1e-04 - 0.005	0.001	0.0017	0.017	0.017	0.059	
Freshwater	PBDE 203	Total	125	74	2.1e-06 - 0.005	0.00086	0.019	0.017	0.017	0.051	
Freshwater	PBDE 205	Total	46	4	2.2e-06 - 0.000611	0.00005	0.00051	0.017	0.017	0.0029	
Freshwater	PBDE 206	Total	174	49	6.3e-07 - 0.01	0.0046	0.52	0.0011		4.2	
Freshwater	PBDE 207	Total	171	51	6.3e-07 - 0.01	0.0061	0.62	0.0011		5.5	
Freshwater	PBDE 208	Total	170	51	7.5e-07 - 0.01	0.0039	0.42	0.0011		3.5	
Freshwater	PBDE 209	Total	174	49	1.3e-05 - 0.05	0.059	1.1	0.2		0.30	
Marine Water	PBDE 007	Total	57	70	1.2e-07 - 2.26e-06	0.0000013	0.0000079		0.0002		0.0065
Marine Water	PBDE 008	Total	57	68	1.2e-07 - 2.58e-06	0.0000013	0.0000043		0.0002		0.0065
Marine Water	PBDE 010	Total	51	2	1.2e-07 - 1.44e-06	0.00000038	0.00000089		0.0002		0.0019
Marine Water	PBDE 012	Total	57	60	1.2e-07 - 6.48e-06	0.00000068	0.0000022		0.0002		0.0034
Marine Water	PBDE 015	Total	57	91	1.2e-07 - 7.36e-06	0.0000056	0.000012		0.0002		0.028
Marine Water	PBDE 017	Total	57	89	1.5e-07 - 0.000123	0.000044	0.00012	0.046	0.046		0.0010
Marine Water	PBDE 028	Total	57	100	1.3e-07 - 7.2e-06	0.0001	0.00021	0.046	0.046		0.0022
Marine Water	PBDE 030	Total	57	0	1.5e-07 - 5.59e-05	0.00000067	0	0.046	0.046		0.000015
Marine Water	PBDE 032	Total	57	2	1.2e-07 - 1.18e-05	0.00000052	0.0000031	0.046	0.046		0.000011
Marine Water	PBDE 035	Total	45	40	1.3e-07 - 0.000169	0.00000076	0.00000089	0.046	0.046		0.000017
Marine Water	PBDE 037	Total	35	63	2.3e-07 - 1.04e-05	0.0000054	0.0000085	0.046	0.046		0.00012

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Marine Water	PBDE 047	Total	51	100	1.2e-07 - 1.83e-06	0.0036	0.01	0.024	0.024		0.15
Marine Water	PBDE 049	Total	57	100	1.2e-07 - 2.6e-06	0.0002	0.00042	0.024	0.024		0.0083
Marine Water	PBDE 051	Total	57	88	1.2e-07 - 1.35e-05	0.000018	0.00004	0.024	0.024		0.00075
Marine Water	PBDE 066	Total	50	98	1.3e-07 - 2.71e-05	0.00015	0.0004	0.024	0.024		0.0063
Marine Water	PBDE 071	Total	51	86	1.2e-07 - 2.06e-05	0.000026	0.000048	0.024	0.024		0.0011
Marine Water	PBDE 075	Total	46	70	1.2e-07 - 1.13e-05	0.00001	0.00002	0.024	0.024		0.00042
Marine Water	PBDE 077	Total	57	21	1.2e-07 - 3.25e-06	0.00000039	0.0000019	0.024	0.024		0.000016
Marine Water	PBDE 079	Total	57	35	1.2e-07 - 6.55e-06	0.0000043	0.000035	0.024	0.024		0.00018
Marine Water	PBDE 085	Total	44	100	2.5e-07 - 1.74e-05	0.00022	0.00059	0.0002	0.0002		1.1
Marine Water	PBDE 099	Total	44	100	1.5e-07 - 1.25e-05	0.0048	0.012	0.004	0.004		1.2
Marine Water	PBDE 100	Total	45	100	1.2e-07 - 7.49e-06	0.001	0.0024	0.0002	0.0002		5.0
Marine Water	PBDE 105	Total	57	2	1.8e-07 - 2.51e-05	0.0000017	0.0000032	0.0002	0.0002		0.0085
Marine Water	PBDE 116	Total	53	2	2.4e-07 - 3.64e-05	0.0000021	0.0000018	0.0002	0.0002		0.011
Marine Water	PBDE 119	Total	43	67	2.5e-07 - 1.98e-05	0.000038	0.00012	0.0002	0.0002		0.19
Marine Water	PBDE 126	Total	54	9	1.2e-07 - 1.36e-05	0.00000069	0.000005	0.0002	0.0002		0.0035
Marine Water	PBDE 128	Total	57	2	5.6e-07 - 0.000147	0.0000018	0.000023	0.12	0.12		0.000015
Marine Water	PBDE 138	Total	42	88	2.6e-07 - 4.6e-05	0.000089	0.00016	0.12	0.12		0.00074
Marine Water	PBDE 140	Total	42	67	1.6e-07 - 6.42e-05	0.00002	0.00007	0.12	0.12		0.00017
Marine Water	PBDE 153	Total	44	100	2.1e-07 - 2.83e-05	0.00058	0.0012	0.12	0.12		0.0048
Marine Water	PBDE 154	Total	42	100	1.2e-07 - 1.66e-05	0.0005	0.00096	0.12	0.12		0.0042
Marine Water	PBDE 155	Total	42	88	1.2e-07 - 6.43e-05	0.000029	0.000085	0.12	0.12		0.00024
Marine Water	PBDE 181	Total	57	9	2.1e-07 - 3.84e-05	0.0000015	0.0000097	0.017	0.017		0.000088
Marine Water	PBDE 183	Total	46	98	1.6e-07 - 2.73e-05	0.00039	0.00066	0.017	0.017		0.023
Marine Water	PBDE 190	Total	53	26	3e-07 - 0.000117	0.000017	0.000096	0.017	0.017		0.0010
Marine Water	PBDE 197	Total	11	100	5.2e-06 - 7.1e-05	0.00033	0.00044	0.017	0.017		0.019
Marine Water	PBDE 203	Total	41	93	3.6e-07 - 0.000117	0.00042	0.00071	0.017	0.017		0.025
Marine Water	PBDE 205	Total	19	0	3.7e-07 - 2e-04	0.000056	0	0.017			
Marine Water	PBDE 206	Total	40	98	3.7e-07 - 7.92e-05	0.0027	0.0052	0.0011			
Marine Water	PBDE 207	Total	41	98	2.2e-07 - 9.61e-05	0.0033	0.0071	0.0011			
Marine Water	PBDE 208	Total	36	100	3.1e-07 - 0.000104	0.0024	0.0046	0.0011			

Table A.5a: Occurrence data, toxicity thresholds, and risk quotients for polybrominated diphenyl ethers in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. NA = Not Available (when MDL is not recorded). A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Marine Water	PBDE 209	Total	31	100	1.7e-05 - 0.00024	0.05	0.069	0.2			

Table A.5b: Occurrence data, toxicity thresholds, and risk quotients for brominated flame retardants other than PBDEs in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. NA = Not Available (when MDL is not recorded). RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	1,2-Bis(2,4,6-tribromophenoxy)ethane	Dissolved	36	0	4e-04 - 4e-04	0.0004	0	0.013		0.031	
Estuarine Water	2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate	Dissolved	36	11	2e-04 - 2e-04	0.0002	0.0018	0.0093		0.022	
Estuarine Water	2,4,6-Tribromophenyl allyl ether	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.34		0.00059	
Estuarine Water	Bis(2-ethylhexyl)tetrabromophthalate	Dissolved	36	22	2e-04 - 2e-04	0.00055	0.003	0.00095	0.00095	1	1
Estuarine Water	Dechlorane 604 (total)	Dissolved	36	0	2e-04 - 2e-04	0.0002	0				
Estuarine Water	Dibromo-4-(1,2-dibromoethyl)cyclohexane, alpha-1,2-	Dissolved	36	0	5e-04 - 5e-04	0.0005	0				
Estuarine Water	Dibromo-4-(1,2-dibromoethyl)cyclohexane, beta-1,2-	Dissolved	36	0	5e-04 - 5e-04	0.0005	0				
Estuarine Water	Dibromo-4-(1,2-dibromoethyl)cyclohexane, gamma-1,2-	Dissolved	36	0	6e-04 - 6e-04	0.0006	0				
Estuarine Water	Hexabromobenzene	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.045		0.0044	
Estuarine Water	Hexabromocyclododecane, alpha-	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.0016	0.062	0.13	0.0032
Estuarine Water	Hexabromocyclododecane, beta-	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.0016	0.062	0.13	0.0032
Estuarine Water	Hexabromocyclododecane, gamma-	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.0016	0.062	0.13	0.0032
Estuarine Water	Hexachlorocyclopentadienyldibromocyclooctane	Dissolved	36	0	3e-04 - 3e-04	0.0003	0				
Estuarine Water	Pentabromobenzene	Dissolved	36	0	2e-04 - 2e-04	0.0002	0				
Estuarine Water	Pentabromobenzyl acrylate	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.017		0.012	
Estuarine Water	Pentabromobenzyl bromide/Pentabromotoluene	Dissolved	36	0	2e-04 - 2e-04	0.0002	0	0.0002		1	
Estuarine Water	Tetrabromo-o-chlorotoluene	Dissolved	36	0	4e-04 - 4e-04	0.0004	0				
Estuarine Water	Tetrabromo-p-xylene	Dissolved	36	0	4e-04 - 4e-04	0.0004	0				
Estuarine Water	Tris(2,3-dibromopropyl) phosphate	Dissolved	70	7	8e-04 - 8e-04	0.0008	0.044	0.14		0.0057	
Estuarine Water	PBB 101	Dissolved	36	0	2e-04 - 2e-04	0.0002	0				

Table A.8: Occurrence data, toxicity thresholds, and risk quotients for select current-use pesticides in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	Bifenthrin	Dissolved	133	3	7e-04 - 4.7	4.7	0.012	0.0006		7833	
Estuarine Water	Bifenthrin	Total	11	73	5e-05 - 0.0017	0.038	0.16	0.0006		63	
Estuarine Water	Cyfluthrin	Dissolved	133	0	0.001 - 5.2	5.2	0	0.00005		104000	
Estuarine Water	Cyfluthrin	Total	11	18	5e-05 - 0.0011	0.0018	0.024	0.00005		36	
Estuarine Water	Desulfinylfipronil amide	Dissolved	16	0	8e-04 - 0.0032	0.0032	0				
Estuarine Water	Fipronil	Dissolved	146	8	5e-04 - 2.9	2.9	0.012	0.0032		906	
Estuarine Water	Fipronil amide	Dissolved	3	0	0.0016 - 0.0016	0.0016	0				
Estuarine Water	Fipronil desulfinyl	Dissolved	146	8	5e-04 - 1.6	1.6	0.006	0.53		3.0	
Estuarine Water	Fipronil sulfide	Dissolved	146	2	5e-04 - 1.8	1.8	0.0054	0.00014		12857	
Estuarine Water	Fipronil sulfone	Dissolved	146	5	5e-04 - 3.5	3.5	0.0082	0.00017		20588	
Estuarine Water	Imidacloprid	Dissolved	44	27	0.0038 - 4.9	3.8	0.087	0.016		238	
Estuarine Water	Imidacloprid	Total	114	56	0.0013 - 0.0394	0.0045	0.48	0.016		0.28	
Estuarine Water	Imidacloprid-desnitro-olefine	Total	2	0	0.0081 - 0.0081	0.0081	0				
Estuarine Water	Imidacloprid-olefine	Total	2	0	0.044 - 0.0443	0.044	0				
Estuarine Water	Imidacloprid-urea	Dissolved	21	10	0.004 - 4	0.004	0	47400		0.000000084	
Estuarine Water	Imidacloprid-urea	Total	2	50	0.0095 - 0.00947	0.0095	0.0095	47400		0.00000020	
Estuarine Water	Permethrin	Dissolved	133	3	6e-04 - 3.4	3.4	0.015	0.002		1700	
Estuarine Water	Permethrin	Total	2	0	NA		0	0.002			
Freshwater	Bifenthrin	Dissolved	1,819	2	5e-04 - 500	4.7	0.14	0.0006		7833	
Freshwater	Bifenthrin	Total	3,880	25	5e-05 - 0.085	0.012	19	0.0006		20	
Freshwater	Cyfluthrin	Dissolved	1,477	0	5e-04 - 5.2	1	0	0.00005		20000	
Freshwater	Cyfluthrin	Total	3,964	9	5e-05 - 0.13	0.0011	3.4	0.00005		22	
Freshwater	Desulfinylfipronil amide	Dissolved	163	3	8e-04 - 0.0032	0.0032	0.013				
Freshwater	Desulfinylfipronil amide	Total	72	32	8e-04 - 0.005	0.005	0.023				
Freshwater	Fipronil	Dissolved	2,713	20	5e-04 - 250	2.9	0.13	0.0032		906	
Freshwater	Fipronil	Total	178	68	5e-05 - 0.02	0.049	0.38	0.0032		15	
Freshwater	Fipronil amide	Dissolved	35	9	0.0016 - 0.0016	0.0016	0.025				
Freshwater	Fipronil amide	Total	72	40	0.0016 - 0.005	0.005	0.039				
Freshwater	Fipronil desulfinyl	Dissolved	2,423	21	5e-04 - 100	0.012	0.087	0.53		0.023	
Freshwater	Fipronil desulfinyl	Total	172	69	5e-05 - 0.02	0.017	0.08	0.53		0.032	
Freshwater	Fipronil sulfide	Dissolved	2,672	12	5e-04 - 250	1.8	0.041	0.00014		12857	
Freshwater	Fipronil sulfide	Total	178	53	5e-05 - 0.02	0.003	0.016	0.00014		21	
Freshwater	Fipronil sulfone	Dissolved	2,623	12	5e-04 - 250	3.5	0.14	0.00017		20588	
Freshwater	Fipronil sulfone	Total	178	72	5e-05 - 0.02	0.044	0.098	0.00027		163	
Freshwater	Imidacloprid	Dissolved	2,146	26	0.0038 - 50	3.8	4.2	0.016		238	
Freshwater	Imidacloprid	Total	752	62	2e-04 - 0.5	1.1	9.9	0.016		69	

Table A.8: Occurrence data, toxicity thresholds, and risk quotients for select current-use pesticides in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Freshwater	Imidacloprid-desnitro-olefine	Total	53	0	0.0081 - 0.0081	0.0081	0				
Freshwater	Imidacloprid-olefine	Total	53	0	0.044 - 0.0443	0.044	0				
Freshwater	Imidacloprid-urea	Dissolved	234	2	0.004 - 4	4	0.0099	47,400		0.000084	
Freshwater	Imidacloprid-urea	Total	53	42	0.0095 - 0.00947	0.0095	0.058	47,400		0.00000020	
Freshwater	Permethrin	Dissolved	967	1	6e-04 - 3.4	0.6	0.015	0.002		300	
Freshwater	Permethrin	Total	2,385	9	2e-04 - 0.38	0.005	10	0.002		2.5	
Marine Water	Bifenthrin	Dissolved	30	3	NA	0.0041	0.0041	0.0006		6.8	
Marine Water	Bifenthrin	Total	718	7	5e-05 - 0.0169	0.0017	0.42	0.0006		2.83	
Marine Water	Cyfluthrin	Total	731	6	1e-04 - 0.244	0.0011	0.025	0.00005		22	
Marine Water	Desulfinylfipronil amide	Dissolved	1	0	8e-04 - 8e-04	0.0008	0				
Marine Water	Fipronil	Dissolved	31	90	5e-04 - 0.005	0.016	0.019	0.0032		5.0	
Marine Water	Fipronil	Total	37	22	0.002 - 0.02	0.028	0.06	0.0032		8.8	
Marine Water	Fipronil amide	Dissolved	1	0	0.0016 - 0.0016	0.0016	0				
Marine Water	Fipronil desulfinyl	Dissolved	31	68	5e-04 - 0.0025	0.007	0.01	0.53		0.013	
Marine Water	Fipronil sulfide	Dissolved	31	13	5e-04 - 0.0025	0.0005	0.006	0.00014		3.6	
Marine Water	Fipronil sulfone	Dissolved	31	90	5e-04 - 0.005	0.014	0.026	0.00017		82	
Marine Water	Imidacloprid	Dissolved	37	19	0.008 - 0.008	0.008	0.039	0.016		0.50	
Marine Water	Permethrin	Total	135	41	0.00035 - 0.05	0.019	0.22	0.002		9.5	

Table A.8: Occurrence data, toxicity thresholds, and risk quotients for select pharmaceuticals in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Sample	DF (%)	MDL Range (ug/L)	Q90 (ug/L)	Max (ug/L)	Freshwater Thresholds (ug/L)	Marine Thresholds (ug/L)	RQ (Freshwater)	RQ (Marine)
Estuarine Water	Azithromycin	Dissolved	14	100	0.003 - 0.0219	0.69	0.79	0.019	0.019	36	36
Estuarine Water	Azithromycin	Total	2	0	0.0014 - 0.00147	0.0014	0	0.019	0.019	0.074	0.074
Estuarine Water	Ciprofloxacin	Dissolved	14	93	0.012 - 0.05	0.28	0.29	0.089	0.089	3.1	3.1
Estuarine Water	Ciprofloxacin	Total	5	0	0.0055 - 0.00593	0.0058	0	0.089	0.089	0.065	0.065
Estuarine Water	Clarithromycin	Dissolved	14	100	0.0029 - 0.00342	0.19	0.42	0.12	0.12	1.6	1.6
Estuarine Water	Clarithromycin	Total	5	40	0.0014 - 0.00148	0.0064	0.018	0.12	0.12	0.053	0.053
Estuarine Water	Erythromycin	Dissolved	14	100	0.0045 - 0.00524	0.07	0.079	0.02		3.5	
Estuarine Water	Erythromycin	Total	5	100	0.00028 - 0.000297	0.0032	0.012	0.02		0.16	
Estuarine Water	Fluoxetine	Dissolved	14	100	0.0029 - 0.0317	0.052	0.091	0.1	0.0043	0.52	12
Estuarine Water	Fluoxetine	Total	5	0	0.0014 - 0.00155	0.0015	0	0.1	0.0043	0.015	0.35
Estuarine Water	Gemfibrozil	Dissolved	14	100	0.0029 - 0.00342	1.1	2	0.3		3.7	
Estuarine Water	Gemfibrozil	Total	5	100	0.0014 - 0.00148	0.033	0.038	0.3		0.11	
Estuarine Water	Ibuprofen	Dissolved	14	29	0.029 - 0.0342	1.1	1.3	0.026		42	
Estuarine Water	Ibuprofen	Total	5	20	0.014 - 0.0148	0.014	0.038	0.026		0.54	
Estuarine Water	Metoprolol	Dissolved	14	100	0.0072 - 0.0405	0.74	0.75	0.1		7.4	
Estuarine Water	Metoprolol	Total	5	60	0.0014 - 0.00401	0.0033	0.026	0.1		0.033	
Freshwater	Azithromycin	Dissolved	7	29	0.005 - 0.005	0.005	0.018	0.019	0.019	0.26	
Freshwater	Ciprofloxacin	Dissolved	7	29	0.005 - 0.005	0.007	0.014	0.089	0.089	0.079	
Freshwater	Erythromycin	Dissolved	425	0	0.008 - 200	10	0.016	0.02		500	
Freshwater	Erythromycin	Total	51	24	0.005 - 0.005	0.024	0.32	0.02		1.2	
Freshwater	Estradiol, 17beta-	Total	72	1	8e-04 - 100	0.8	0.0012	0.0004	0.0004	2000	
Freshwater	Ethinylestradiol, 17alpha-	Total	53	2	8e-04 - 100	100	0.0012	0.000035		2857143	
Freshwater	Fluoxetine	Dissolved	509	1	10 - 25	10	0.0078	0.1	0.0043	100	
Freshwater	Fluoxetine	Total	51	4	0.005 - 0.005	0.005	0.005	0.1	0.0043	0.050	
Freshwater	Gemfibrozil	Dissolved	276	1	10 - 10	10	0.02	0.3		33	
Freshwater	Gemfibrozil	Total	51	31	0.002 - 1	0.3	1.7	0.3		1.0	
Freshwater	Ibuprofen	Dissolved	292	0	0.05 - 25	10	0	0.026		385	
Freshwater	Ibuprofen	Total	51	10	0.02 - 0.02	0.02	0.71	0.026		0.77	
Freshwater	Metoprolol	Dissolved	506	1	10 - 10	10	0.11	0.1		100	

Table A.8: Occurrence data, toxicity thresholds, and risk quotients for select personal care and cleaning product ingredients in California waters. Occurrence data is summarized from California databases. Concentrations are reported in µg/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater	RQ (Marine)
Estuarine Water	Galaxolide	Dissolved	13	23	0.02 - 0.02	0.02	0.02	4.4	0.44	0.0045	0.045
Estuarine Water	Galaxolide	Total	11	18	0.04 - 0.2	0.04	0.03	4.4	0.44	0.0091	0.091
Estuarine Water	Tonalide	Dissolved	13	0	0.02 - 0.02	0.02	0				
Estuarine Water	Tonalide	Total	11	0	0.04 - 0.2	0.04	0				
Estuarine Water	Triclocarban	Dissolved	14	100	0.0059 - 0.00684	0.047	0.048	0.094	0.0094	0.50	5.0
Estuarine Water	Triclocarban	Total	5	0	0.0028 - 0.00297	0.0029	0	0.094	0.0094	0.031	0.31
Estuarine Water	Triclosan	Dissolved	27	22	0.12 - 0.16	0.16	0.24	0.47	0.47	0.34	0.34
Estuarine Water	Triclosan	Total	16	0	0.055 - 0.32	0.32	0	0.47	0.47	0.68	0.68
Freshwater	Galaxolide	Dissolved	14	14	0.052 - 0.5	0.5	0.003	4.4	0.44	0.11	
Freshwater	Galaxolide	Total	40	8	0.04 - 50	50	0.1	4.4	0.44	11	
Freshwater	Tonalide	Dissolved	14	0	0.028 - 1	0.5	0				
Freshwater	Tonalide	Total	40	0	0.04 - 50	50	0				
Freshwater	Triclocarban	Dissolved	271	0	10 - 10	10	0	0.094	0.0094	106	
Freshwater	Triclosan	Dissolved	289	0	0.2 - 25	10	0.08	0.47	0.47	21	
Freshwater	Triclosan	Total	89	13	0.02 - 50	0.02	0.27	0.47	0.47	0.043	
Marine Water	Galaxolide	Total	6	67	0.2 - 0.2	0.2	0.01	4.4	0.44		0.45
Marine Water	Tonalide	Total	6	0	0.2 - 0.2	0.2	0				
Marine Water	Triclosan	Total	6	0	0.2 - 0.2	0.2	0	0.47	0.47		0.43

Table A.9: Occurrence data, toxicity thresholds, and risk quotients for per- and polyfluoroalkyl substances in California waters. Occurrence data is summarized from California databases. Concentrations are reported in ug/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. NA = Not Available (when MDL is not recorded). RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Water	N-EtFOSA	Total	16	0	0.00068 - 0.00919	0.003	0	0.19		0.016	
Estuarine Water	N-MeFOSA	Total	16	6	0.0015 - 0.0178	0.0065	0.0054	0.18		0.036	
Estuarine Water	PFBA	Total	20	50	0.00097 - 0.0151	0.017	0.062	0.1	0.1	0.17	0.17
Estuarine Water	PFBS	Total	20	15	0.002 - 0.00273	0.0037	0.0079	3400	3400	0.0000011	0.0000011
Estuarine Water	PFDA	Total	20	30	0.00097 - 0.00108	0.012	0.029	8.4		0.0014	
Estuarine Water	PFDoA	Total	20	15	0.00097 - 0.00102	0.0012	0.0017	72	72	0.000017	0.000017
Estuarine Water	PFHpA	Total	20	55	0.00097 - 0.00464	0.022	0.067	870	870	0.000025	0.000025
Estuarine Water	PFHxA	Total	20	75	0.00097 - 0.00393	0.024	0.22	0.09	0.09	0.27	0.27
Estuarine Water	PFHxS	Total	20	45	0.002 - 0.00232	0.0097	0.013	0.02	0.02	0.49	0.49
Estuarine Water	PFNA	Total	20	60	0.00097 - 0.00424	0.015	0.024	12	12	0.0013	0.0013
Estuarine Water	PFOA	Total	20	90	0.00097 - 0.00276	0.066	0.076	4.4	4.4	0.015	0.015
Estuarine Water	PFOS	Total	20	65	0.002 - 0.00205	0.014	0.044	0.075	0.075	0.19	0.19
Estuarine Water	PFOSA	Total	20	5	0.00097 - 0.00102	0.001	0.0011	0.00065		1.5	
Estuarine Water	PFPeA	Total	20	55	0.00097 - 0.00585	0.0033	0.15	0.09	0.09	0.037	0.037
Estuarine Water	PFUnA	Total	20	25	0.00097 - 0.00102	0.0018	0.0047	49	49	0.000037	0.000037
Freshwater	6:2 FTS	Total	30	17	2e-04 - 2e-04	0.0009	0.0041	0.1	0.1	0.0090	0.0090
Freshwater	8:2 FTS	Total	30	3	2e-04 - 2e-04	0.0002	0.0007	0.25		0.00080	
Freshwater	N-EtFOSAA	Total	30	30	2e-04 - 2e-04	0.0004	0.0014				
Freshwater	N-MeFOSAA	Total	30	23	2e-04 - 2e-04	0.0005	0.001	0.41		0.0012	
Freshwater	PFBS	Total	30	53	5e-04 - 5e-04	0.0056	0.011	3400	3400	0.0000016	0.0000016
Freshwater	PFDA	Total	30	97	2e-04 - 2e-04	0.0032	0.004	8.4		0.00038	
Freshwater	PFDoA	Total	30	67	2e-04 - 2e-04	0.0008	0.0019	72	72	0.000011	0.000011
Freshwater	PFDS	Total	30	27	2e-04 - 2e-04	0.0004	0.0007				
Freshwater	PFHpA	Total	30	100	NA	0.0042	0.0057	870	870	0.0000048	0.0000048
Freshwater	PFHxA	Total	30	100	NA	0.0077	0.0097	0.09	0.09	0.086	0.086
Freshwater	PFHxS	Total	30	100	NA	0.0037	0.0065	0.02	0.02	0.19	0.19
Freshwater	PFNA	Dissolved	77	0	10 - 10	10	0	12	12	0.83	0.83
Freshwater	PFNA	Total	30	100	NA	0.0028	0.0038	12	12	0.00023	0.00023
Freshwater	PFOA	Dissolved	77	0	10 - 10	10	0	4.4	4.4	2.3	2.3
Freshwater	PFOA	Total	30	100	NA	0.011	0.016	4.4	4.4	0.0025	0.0025

Table A.9: Occurrence data, toxicity thresholds, and risk quotients for per- and polyfluoroalkyl substances in California waters. Occurrence data is summarized from California databases. Concentrations are reported in ug/L. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. NA = Not Available (when MDL is not recorded). RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	Water Fraction	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Freshwater	PFOS	Dissolved	77	0	10 - 10	10	0	0.075	0.075	133	133
Freshwater	PFOS	Total	30	100	NA	0.021	0.026	0.075	0.075	0.28	0.28
Freshwater	PFOSA	Total	30	87	2e-04 - 2e-04	0.0013	0.0018	0.00065		2.0	
Freshwater	PFPeA	Total	30	93	3e-04 - 3e-04	0.0068	0.0095	0.09	0.09	0.076	0.076
Freshwater	PFUnA	Total	30	37	3e-04 - 3e-04	0.0009	0.0011	49	49	0.000018	0.000018
Marine Water	6:2 FTS	Total	3	0	2e-04 - 2e-04	0.0002	0	0.1	0.1	0.0020	0.0020
Marine Water	8:2 FTS	Total	3	0	2e-04 - 2e-04	0.0002	0	0.25		0.00080	
Marine Water	N-EtFOSAA	Total	3	33	2e-04 - 2e-04	0.0003	0.0003				
Marine Water	N-MeFOSAA	Total	3	0	2e-04 - 2e-04	0.0002	0	0.41		0.00049	
Marine Water	PFBS	Total	3	0	5e-04 - 5e-04	0.0005	0	3400	3400	0.00000015	0.00000015
Marine Water	PFDA	Total	3	67	2e-04 - 2e-04	0.0017	0.0017	8.4		0.00020	
Marine Water	PFDoA	Total	3	0	2e-04 - 2e-04	0.0002	0	72	72	0.0000028	0.0000028
Marine Water	PFDS	Total	3	0	2e-04 - 2e-04	0.0002	0				
Marine Water	PFHpA	Total	3	100	NA	0.0014	0.0014	870	870	0.0000016	0.0000016
Marine Water	PFHxA	Total	3	100	NA	0.0033	0.0033	0.09	0.09	0.037	0.037
Marine Water	PFHxS	Total	3	67	2e-04 - 2e-04	0.0006	0.0006	0.02	0.02	0.030	0.030
Marine Water	PFNA	Total	3	100	NA	0.0009	0.0009	12	12	0.000075	0.000075
Marine Water	PFOA	Total	3	100	NA	0.004	0.004	4.4	4.4	0.00091	0.00091
Marine Water	PFOS	Total	3	100	NA	0.0057	0.0057	0.075	0.075	0.076	0.076
Marine Water	PFOSA	Total	3	67	2e-04 - 2e-04	0.0007	0.0007	0.00065		1.1	
Marine Water	PFPeA	Total	3	67	3e-04 - 3e-04	0.002	0.002	0.09	0.09	0.022	0.022
Marine Water	PFUnA	Total	3	0	3e-04 - 3e-04	0.0003	0	49	49	0.0000061	0.0000061

Appendix B: Occurrence data, toxicity thresholds, and risk quotients for key CEC classes in California sediment

Table B.1: Occurrence data, toxicity thresholds, and risk quotients for alkylphenols and alkylphenol ethoxylates in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Sediment	4-Nonylphenol	29	31	0.33 - 7575	750	200	4620	1230	0.16	0.61
Estuarine Sediment	4-Octylphenol	10	0	100 - 505	100	0	39.3	0.0034	2.5	29,412
Estuarine Sediment	4-tert-Octylphenol	23	4	50 - 505	100	10	4620	1230	0.022	0.081
Estuarine Sediment	4-tert-Octylphenol diethoxylate (OP2EO)	10	0	100 - 505	100	0	4600	460	0.022	0.22
Estuarine Sediment	Nonylphenol diethoxylate (NP2EO)	29	17	1.1 - 10100	1000	19				
Estuarine Sediment	Nonylphenol monoethoxylate (NP1EO)	29	21	0.52 - 5050	500	40				
Estuarine Sediment	Octylphenol ethoxylate (OPnEO)	13	0	250 - 500	250	0				
Freshwater Sediment	4-Nonylphenol	4	0	450 - 1500	520	0	4620	1230	0.11	
Freshwater Sediment	4-Octylphenol	4	0	30 - 100	35	0	39.3	0.0034	0.89	
Freshwater Sediment	4-tert-Octylphenol	4	25	30 - 100	35	10	4620	1230	0.0076	
Freshwater Sediment	4-tert-Octylphenol diethoxylate (OP2EO)	4	0	30 - 100	35	0	4600	460	0.0076	
Freshwater Sediment	Nonylphenol diethoxylate (NP2EO)	4	0	600 - 2000	700	0				
Freshwater Sediment	Nonylphenol monoethoxylate (NP1EO)	4	0	300 - 1000	350	0				

Table B.2: Occurrence data, toxicity thresholds, and risk quotients for bisphenols in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Sample	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Sediment	Bisphenol A	29	7	50 - 2580	100	71	25	25	4.0	4.0
Freshwater Sediment	Bisphenol A	1	0	100 - 100	100	0	25	25	4.0	4.0

Table B.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Sediment	PBDE 001	434	100	0.4 - 0.4				0.062		
Estuarine Sediment	PBDE 002	434	100	0.4 - 0.4				0.062		
Estuarine Sediment	PBDE 007	766	97	5.4e-05 - 0.4	0.2	0.3		0.062		3.2
Estuarine Sediment	PBDE 008	767	88	4e-05 - 0.4	0.4	0.4		0.062		6.5
Estuarine Sediment	PBDE 010	710	71	4.5e-05 - 0.4	0.4	0.0068		0.062		6.5
Estuarine Sediment	PBDE 011	434	100	0.4 - 0.4				0.062		
Estuarine Sediment	PBDE 012	738	82	3e-05 - 0.4	0.4	0.054		0.062		6.5
Estuarine Sediment	PBDE 013	434	100	0.4 - 0.4	0.3	0.4		0.062		4.8
Estuarine Sediment	PBDE 015	772	98	2.7e-05 - 0.4	0.2	5.5		0.062		3.2
Estuarine Sediment	PBDE 017	1053	74	0.00013 - 5	0.29	5	44	44	0.0066	0.0066
Estuarine Sediment	PBDE 025	434	100	0.4 - 0.4	0.4	0.4	44	44	0.0091	0.0091
Estuarine Sediment	PBDE 028	1091	70	9.2e-05 - 5	0.16	14	44	44	0.0036	0.0036
Estuarine Sediment	PBDE 030	755	67	9.2e-05 - 0.4	0.4	4.9	44	44	0.0091	0.0091
Estuarine Sediment	PBDE 032	758	74	9.8e-05 - 0.4	0.4	0.32	44	44	0.0091	0.0091
Estuarine Sediment	PBDE 033	435	100	0.4 - 0.4	0.2	0.2	44	44	0.0045	0.0045
Estuarine Sediment	PBDE 035	768	75	9.2e-05 - 0.4	0.4	0.5	44	44	0.0091	0.0091
Estuarine Sediment	PBDE 037	728	82	9.8e-05 - 0.4	0.4	0.8	44	44	0.0091	0.0091
Estuarine Sediment	PBDE 047	1040	86	7.6e-05 - 100	1.2	88	39	39	0.031	0.031
Estuarine Sediment	PBDE 049	1059	75	9.1e-05 - 5	0.5	6	39	39	0.013	0.013
Estuarine Sediment	PBDE 051	327	76	6.7e-05 - 0.0208	0.025	0.056	39	39	0.00064	0.00064
Estuarine Sediment	PBDE 066	1069	79	9.1e-05 - 5	0.84	2	39	39	0.022	0.022
Estuarine Sediment	PBDE 071	314	61	9.1e-05 - 0.0137	0.018	0.23	39	39	0.00046	0.00046
Estuarine Sediment	PBDE 075	692	78	8.9e-05 - 0.7	0.8	5.1	39	39	0.021	0.021
Estuarine Sediment	PBDE 077	754	64	7.5e-05 - 0.7	0.7	0.6	39	39	0.018	0.018
Estuarine Sediment	PBDE 079	269	16	8.9e-05 - 0.0114	0.0013	0.011	39	39	0.000033	0.000033
Estuarine Sediment	PBDE 085	1055	57	1e-04 - 5	0.8	4.5	0.4	0.4	2.0	2.0
Estuarine Sediment	PBDE 099	1034	82	9.5e-05 - 5	1.1	34	0.4	0.4	2.8	2.8
Estuarine Sediment	PBDE 100	1067	79	9.2e-05 - 5	0.33	6.4	0.4	0.4	0.83	0.83
Estuarine Sediment	PBDE 105	326	7	0.00011 - 0.0362	0.0017	0.019	0.4	0.4	0.0043	0.0043
Estuarine Sediment	PBDE 116	736	60	0.00011 - 0.8	0.8	86	0.4	0.4	2.0	2.0
Estuarine Sediment	PBDE 118	434	100	0.8 - 0.8	0.5	0.5	0.4	0.4	1.3	1.3

Table B.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Sediment	PBDE 119	667	71	0.00016 - 0.8	0.8	17	0.4	0.4	2.0	2.0
Estuarine Sediment	PBDE 126	753	67	1e-04 - 0.8	0.8	0.0015	0.4	0.4	2.0	2.0
Estuarine Sediment	PBDE 128	301	8	0.00021 - 0.0593	0.003	0.0042	440	440	0.0000068	0.0000068
Estuarine Sediment	PBDE 138	1069	52	9.5e-05 - 5	0.2	4.6	440	440	0.00045	0.00045
Estuarine Sediment	PBDE 140	306	32	9.5e-05 - 0.018	0.0021	0.0095	440	440	0.0000048	0.0000048
Estuarine Sediment	PBDE 153	1077	73	9.2e-05 - 5	0.3	4.8	440	440	0.00068	0.00068
Estuarine Sediment	PBDE 154	1073	73	9.1e-05 - 5	0.3	4.1	440	440	0.00068	0.00068
Estuarine Sediment	PBDE 155	760	80	9.1e-05 - 1	1	8.1	440	440	0.0023	0.0023
Estuarine Sediment	PBDE 166	434	100	1 - 1	0.2	0.2	440	440	0.00045	0.00045
Estuarine Sediment	PBDE 179	11	0	0.05 - 0.57	0.38	0		0.062		6.1
Estuarine Sediment	PBDE 181	735	64	1e-04 - 1.4	1.4	0.2		0.062		23
Estuarine Sediment	PBDE 183	998	66	9.2e-05 - 5	0.65	2.6		0.062		10
Estuarine Sediment	PBDE 184	11	0	0.05 - 0.57	0.37	0		0.062		6.0
Estuarine Sediment	PBDE 188	11	0	0.05 - 0.57	0.37	0		0.062		6.0
Estuarine Sediment	PBDE 190	861	53	9.7e-05 - 1.7	1.7	1.6		0.062		27
Estuarine Sediment	PBDE 194	434	100	1.7 - 1.7			5600	5600		
Estuarine Sediment	PBDE 195	434	100	1.7 - 1.7			5600	5600		
Estuarine Sediment	PBDE 196	726	82	0.00094 - 1.7	1.7	5.4	5600	5600	0.00030	0.00030
Estuarine Sediment	PBDE 197	739	81	7e-04 - 1.7	1.7	0.5	5600	5600	0.00030	0.00030
Estuarine Sediment	PBDE 198	434	100	1.7 - 1.7	1.1	1.1	5600	5600	0.00020	0.00020
Estuarine Sediment	PBDE 200	11	45	0.05 - 0.57	0.44	3.8	5600	5600	0.000079	0.000079
Estuarine Sediment	PBDE 201	471	94	0.03 - 1.7	1.7	2.4	5600	5600	0.00030	0.00030
Estuarine Sediment	PBDE 202	471	92	0.03 - 1.7	1.7	0.42	5600	5600	0.00030	0.00030
Estuarine Sediment	PBDE 203	340	54	0.00018 - 0.05	0.032	0.07	5600	5600	0.0000057	0.0000057
Estuarine Sediment	PBDE 204	688	64	0.0013 - 1.7	1.7	0.7	5600	5600	0.00030	0.00030
Estuarine Sediment	PBDE 205	714	61	0.00081 - 1.7	1.7	0.1	5600	5600	0.00030	0.00030
Estuarine Sediment	PBDE 206	798	93	9.1e-05 - 1.7	1.1	23		0.062		18
Estuarine Sediment	PBDE 207	795	89	9.3e-05 - 1.95	1.7	38		0.062		27
Estuarine Sediment	PBDE 208	788	82	1e-04 - 1.7	1.7	24		0.062		27
Estuarine Sediment	PBDE 209	512	73	1e-04 - 21.3	4.6	380	19	19	0.24	0.24
Freshwater Sediment	PBDE 015	43	0	NA		0		0.062		

Table B.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Freshwater Sediment	PBDE 017	451	31	0.023 - 0.985	0.25	6.3	44	44	0.0057	0.0057
Freshwater Sediment	PBDE 025	9	0	0.16 - 0.444	0.19	0	44	44	0.0043	0.0043
Freshwater Sediment	PBDE 028	494	32	0.024 - 1.05	0.25	5.4	44	44	0.0057	0.0057
Freshwater Sediment	PBDE 030	274	0	0.05 - 0.497	0.094	8.7	44	44	0.0021	0.0021
Freshwater Sediment	PBDE 033	52	0	0.11 - 0.291	0.13	0	44	44	0.0030	0.0030
Freshwater Sediment	PBDE 047	494	77	0.029 - 4.09	11	100	39	39	0.28	0.28
Freshwater Sediment	PBDE 049	245	61	0.052 - 0.55	0.86	11	39	39	0.022	0.022
Freshwater Sediment	PBDE 066	494	38	0.019 - 0.953	1.8	11	39	39	0.046	0.046
Freshwater Sediment	PBDE 071	20	10	0.015 - 0.075	0.05	0.45	39	39	0.0013	0.0013
Freshwater Sediment	PBDE 075	43	26	NA	0.52	0.56	39	39	0.013	0.013
Freshwater Sediment	PBDE 085	451	25	0.04 - 1.25	0.46	19	0.4	0.4	1.2	1.2
Freshwater Sediment	PBDE 099	494	77	0.03 - 2.79	16	150	0.4	0.4	40	40
Freshwater Sediment	PBDE 100	494	58	0.014 - 2.29	2.9	30	0.4	0.4	7.3	7.3
Freshwater Sediment	PBDE 128	8	0	0.0099 - 0.05	0.02	0	440	440	0.000045	0.000045
Freshwater Sediment	PBDE 138	451	11	0.016 - 1.42	0.24	28	440	440	0.00055	0.00055
Freshwater Sediment	PBDE 153	495	45	0.0087 - 1.31	2.3	22	440	440	0.0052	0.0052
Freshwater Sediment	PBDE 154	494	44	0.0078 - 1.17	1.8	20	440	440	0.0041	0.0041
Freshwater Sediment	PBDE 155	43	40	NA	0.3	0.36	440	440	0.00068	0.00068
Freshwater Sediment	PBDE 179	274	2	0.05 - 1.34	0.32	2.4		0.062		5.2
Freshwater Sediment	PBDE 183	494	19	0.013 - 2.1	0.61	26		0.062		9.8
Freshwater Sediment	PBDE 184	263	2	0.05 - 1.34	0.29	1.6		0.062		4.7
Freshwater Sediment	PBDE 188	274	1	0.05 - 1.34	0.3	2.3		0.062		4.8
Freshwater Sediment	PBDE 190	451	1	0.02 - 3.09	0.38	2.4		0.062		6.1
Freshwater Sediment	PBDE 200	274	21	0.05 - 1.34	0.47	2.1	5600	5600	0.000084	0.000084
Freshwater Sediment	PBDE 201	273	14	0.05 - 1.34	0.29	1.3	5600	5600	0.000052	0.000052
Freshwater Sediment	PBDE 202	274	4	0.05 - 1.34	0.34	1.6	5600	5600	0.000061	0.000061
Freshwater Sediment	PBDE 203	89	9	0.029 - 0.884	0.05	1.2	5600	5600	0.0000089	0.0000089
Freshwater Sediment	PBDE 206	282	27	0.031 - 3.34	1.8	19		0.062		29
Freshwater Sediment	PBDE 207	274	27	0.05 - 4.4	2.3	30		0.062		37
Freshwater Sediment	PBDE 208	274	22	0.05 - 3.45	1.5	23		0.062		24
Freshwater Sediment	PBDE 209	316	59	0.026 - 18.6	110	540	19	19	5.8	5.8

Table B.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Marine Sediment	PBDE 001	115	100	0.4 - 0.4				0.062		
Marine Sediment	PBDE 002	115	100	0.4 - 0.4	0.2	0.2		0.062		3.2
Marine Sediment	PBDE 003	6	0	0.039 - 0.042	0.041	0		0.062		0.66
Marine Sediment	PBDE 007	142	99	0.00019 - 0.4	0.1	0.1		0.062		1.6
Marine Sediment	PBDE 008	142	100	0.00015 - 0.4	0.0012	0.0016		0.062		0.019
Marine Sediment	PBDE 010	142	86	0.00022 - 0.4	0.4	0.00029		0.062		6.5
Marine Sediment	PBDE 011	142	81	0.4 - 0.4	0.4	0		0.062		6.5
Marine Sediment	PBDE 012	142	89	0.00012 - 0.4	0.4	0.4		0.062		6.5
Marine Sediment	PBDE 013	142	81	0.4 - 0.4	0.4	0.1		0.062		6.5
Marine Sediment	PBDE 015	142	100	0.00011 - 0.4	0.0011	0.0012		0.062		0.018
Marine Sediment	PBDE 017	189	75	2e-04 - 0.4	0.4	0.5	44	44	0.0091	0.0091
Marine Sediment	PBDE 017	1	0	0.05 - 0.05	0.05	0	44	44	0.0011	0.0011
Marine Sediment	PBDE 025	142	81	0.4 - 0.4	0.4	0	44	44	0.0091	0.0091
Marine Sediment	PBDE 028	190	75	0.00018 - 0.3	0.3	0.6	44	44	0.0068	0.0068
Marine Sediment	PBDE 028	1	0	0.05 - 0.05	0.05	0	44	44	0.0011	0.0011
Marine Sediment	PBDE 030	142	86	0.00021 - 0.4	0.4	0.5	44	44	0.0091	0.0091
Marine Sediment	PBDE 032	142	87	0.00017 - 0.4	0.4	0.2	44	44	0.0091	0.0091
Marine Sediment	PBDE 033	142	81	0.4 - 0.4	0.4	0.1	44	44	0.0091	0.0091
Marine Sediment	PBDE 035	142	94	0.00014 - 0.4	0.4	0.00037	44	44	0.0091	0.0091
Marine Sediment	PBDE 037	142	92	0.00014 - 0.4	0.6	1.2	44	44	0.014	0.014
Marine Sediment	PBDE 047	186	91	9.8e-05 - 0.6	0.6	2.6	39	39	0.015	0.015
Marine Sediment	PBDE 047	1	100	0.05 - 0.05	0.072	0.072	39	39	0.0018	0.0018
Marine Sediment	PBDE 049	189	75	1e-04 - 0.7	0.7	1.2	39	39	0.018	0.018
Marine Sediment	PBDE 049	1	0	0.05 - 0.05	0.05	0	39	39	0.0013	0.0013
Marine Sediment	PBDE 051	27	100	9.8e-05 - 0.000101	0.0014	0.0019	39	39	0.000036	0.000036
Marine Sediment	PBDE 066	188	82	0.00011 - 1.4	1.4	1.1	39	39	0.036	0.036
Marine Sediment	PBDE 066	1	0	0.05 - 0.05	0.05	0	39	39	0.0013	0.0013
Marine Sediment	PBDE 071	53	51	1e-04 - 0.05	0.05	0.0016	39	39	0.0013	0.0013
Marine Sediment	PBDE 071	1	0	0.05 - 0.05	0.05	0	39	39	0.0013	0.0013
Marine Sediment	PBDE 075	142	95	1e-04 - 0.7	0.7	0.7	39	39	0.018	0.018
Marine Sediment	PBDE 077	142	89	1e-04 - 0.7	0.7	0.6	39	39	0.018	0.018

Table B.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Marine Sediment	PBDE 079	27	59	9.9e-05 - 0.000123	0.00024	0.001	39	39	0.0000062	0.0000062
Marine Sediment	PBDE 085	190	72	0.00032 - 0.6	0.6	1.3	0.4	0.4	1.5	1.5
Marine Sediment	PBDE 085	1	0	0.05 - 0.05	0.05	0	0.4	0.4	0.13	0.13
Marine Sediment	PBDE 099	187	87	0.00017 - 0.9	0.9	3.5	0.4	0.4	2.3	2.3
Marine Sediment	PBDE 099	1	100	0.05 - 0.05	0.1	0.1	0.4	0.4	0.25	0.25
Marine Sediment	PBDE 100	189	76	1e-04 - 0.8	0.8	1.5	0.4	0.4	2.0	2.0
Marine Sediment	PBDE 100	1	0	0.05 - 0.05	0.05	0	0.4	0.4	0.13	0.13
Marine Sediment	PBDE 105	27	26	0.00041 - 0.00121	0.00085	0.0003	0.4	0.4	0.0021	0.0021
Marine Sediment	PBDE 116	142	89	6e-04 - 0.8	0.8	0.00088	0.4	0.4	2.0	2.0
Marine Sediment	PBDE 118	115	100	0.8 - 0.8	0.1	0.2	0.4	0.4	0.25	0.25
Marine Sediment	PBDE 119	142	92	0.00033 - 0.8	0.8	0.1	0.4	0.4	2.0	2.0
Marine Sediment	PBDE 120	27	0	NA		0	0.4	0.4		
Marine Sediment	PBDE 126	142	87	0.00024 - 0.8	0.8	0.00015	0.4	0.4	2.0	2.0
Marine Sediment	PBDE 128	27	44	0.00036 - 0.00138	0.00093	0.0016	440	440	0.0000021	0.0000021
Marine Sediment	PBDE 138	190	66	0.00072 - 0.7	0.7	1.5	440	440	0.0016	0.0016
Marine Sediment	PBDE 138	1	0	0.05 - 0.05	0.05	0	440	440	0.00011	0.00011
Marine Sediment	PBDE 140	27	44	0.00038 - 0.000656	0.0005	0.00024	440	440	0.0000011	0.0000011
Marine Sediment	PBDE 153	189	76	0.00044 - 1.9	1.9	1.6	440	440	0.0043	0.0043
Marine Sediment	PBDE 153	1	0	0.05 - 0.05	0.05	0	440	440	0.00011	0.00011
Marine Sediment	PBDE 154	189	75	0.00021 - 1	1	1.6	440	440	0.0023	0.0023
Marine Sediment	PBDE 154	1	0	0.05 - 0.05	0.05	0	440	440	0.00011	0.00011
Marine Sediment	PBDE 155	142	100	0.00024 - 1	0.00084	0.001	440	440	0.0000019	0.0000019
Marine Sediment	PBDE 166	142	81	1 - 1	1	0.1	440	440	0.0023	0.0023
Marine Sediment	PBDE 181	142	86	0.00074 - 1.4	1.4	0.3		0.062		23
Marine Sediment	PBDE 183	189	75	0.00035 - 1.4	1.4	1.6		0.062		23
Marine Sediment	PBDE 183	1	0	0.05 - 0.05	0.05	0		0.062		0.81
Marine Sediment	PBDE 190	187	66	0.0014 - 1.7	1.7	1.6		0.062		27
Marine Sediment	PBDE 190	1	0	0.05 - 0.05	0.05	0		0.062		0.81
Marine Sediment	PBDE 194	115	100	1.7 - 1.7	0.4	0.5	5600	5600	0.000071	0.000071
Marine Sediment	PBDE 195	115	100	1.7 - 1.7	0.2	0.2	5600	5600	0.000036	0.000036
Marine Sediment	PBDE 196	115	100	1.7 - 1.7	0.1	0.2	5600	5600	0.000018	0.000018

Table B.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Samples	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Marine Sediment	PBDE 197	115	100	1.7 - 1.7	0.1	0.1	5600	5600	0.000018	0.000018
Marine Sediment	PBDE 198	115	100	1.7 - 1.7	0.3	0.9	5600	5600	0.000054	0.000054
Marine Sediment	PBDE 201	115	100	1.7 - 1.7	0.2	0.2	5600	5600	0.000036	0.000036
Marine Sediment	PBDE 202	115	100	1.7 - 1.7	0.2	0.2	5600	5600	0.000036	0.000036
Marine Sediment	PBDE 203	27	85	0.00061 - 0.00332	0.01	0.03	5600	5600	0.0000018	0.0000018
Marine Sediment	PBDE 204	115	100	1.7 - 1.7			5600	5600		
Marine Sediment	PBDE 205	115	100	1.7 - 1.7	0.2	0.2	5600	5600	0.000036	0.000036
Marine Sediment	PBDE 206	142	94	0.0016 - 1.7	0.5	0.9		0.062		8.1
Marine Sediment	PBDE 207	142	94	0.0018 - 1.7	1.7	1.9		0.062		27
Marine Sediment	PBDE 208	142	94	0.002 - 1.7	1.7	0.5		0.062		27
Marine Sediment	PBDE 209	56	46	0.0031 - 0.05	0.26	1.4	19	19	0.014	0.014
Marine Sediment	PBDE 209	1	0	0.05 - 0.05	0.05	0	19	19	0.0026	0.0026

Table B.5b: Occurrence data, toxicity thresholds, and risk quotients for brominated flame retardants other than PBDEs in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Sample	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Sediment	1,2-Bis(2,4,6-tribromophenoxy)ethane	26	31	0.025 - 0.025	0.041	0.072				
Estuarine Sediment	2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate	26	8	0.015 - 0.015	0.015	0.037				
Estuarine Sediment	2,4,6-Tribromophenyl allyl ether	26	100	0.015 - 0.015	0.097	0.1				
Estuarine Sediment	Bis(2-ethylhexyl)tetrabromophthalate	26	77	0.015 - 0.015	0.31	0.48				
Estuarine Sediment	Dechlorane 604 (total)	26	0	0.025 - 0.025	0.025	0				
Estuarine Sediment	Dibromo-4-(1,2-dibromoethyl)cyclohexane, alpha-1,2-	13	46	0.025 - 0.025	0.17	0.21				
Estuarine Sediment	Dibromo-4-(1,2-dibromoethyl)cyclohexane, beta-1,2-	13	31	0.03 - 0.03	0.14	1.6				
Estuarine Sediment	Dibromo-4-(1,2-dibromoethyl)cyclohexane, gamma-1,2-	13	23	0.035 - 0.035	0.9	1.1				
Estuarine Sediment	Hexabromobenzene	26	92	0.015 - 0.015	0.7	0.79				
Estuarine Sediment	Hexabromocyclododecane, alpha-	26	69	0.01 - 0.01	0.04	0.07	10000	1000	0.0000040	0.000040
Estuarine Sediment	Hexabromocyclododecane, beta-	26	23	0.01 - 0.01	0.02	0.02	10000	1000	0.0000020	0.000020
Estuarine Sediment	Hexabromocyclododecane, gamma-	26	69	0.01 - 0.01	0.15	0.24	10000	1000	0.000015	0.00015
Estuarine Sediment	Hexachlorocyclopentadienyldibromocyclooctane	26	0	0.03 - 0.03	0.03	0				
Estuarine Sediment	Pentabromobenzene	26	0	0.025 - 0.025	0.025	0				
Estuarine Sediment	Pentabromobenzyl acrylate	26	15	0.02 - 0.02	0.04	0.07				
Estuarine Sediment	Pentabromobenzyl bromide/Pentabromotoluene	26	0	0.02 - 0.02	0.02	0				
Estuarine Sediment	Tetrabromo-o-chlorotoluene	13	0	0.03 - 0.03	0.03	0				
Estuarine Sediment	Tetrabromo-p-xylene	26	0	0.03 - 0.03	0.03	0				
Estuarine Sediment	Tris(2,3-dibromopropyl) phosphate	26	69	0.1 - 0.1	0.31	1				
Estuarine Sediment	PBB 101	26	8	0.02 - 0.02	0.02	0.027				

Table B.9: Occurrence data, toxicity thresholds, and risk quotients for PFAS in California sediment. Occurrence data is summarized from California databases. Concentrations are reported in ug/kg dry weight (dw). DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with median detection limit. A zero value reported as the Maximum indicates result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by either the freshwater or marine thresholds.

Ecosystem	Analyte	# of Sample	DF (%)	MDL Range	Q90	Maximum	Freshwater Threshold	Marine Threshold	RQ (Freshwater)	RQ (Marine)
Estuarine Sediment	FOSAA	11	0	0.36 - 0.39	0.37	0				
Estuarine Sediment	N-EtFOSA	13	0	0.15 - 1.6	0.3	0				
Estuarine Sediment	N-MeFOSA	13	0	0.12 - 1.42	0.56	0				
Estuarine Sediment	PFBA	42	0	0.086 - 0.198	0.099	0				
Estuarine Sediment	PFBS	42	0	0.17 - 0.22	0.2	0				
Estuarine Sediment	PFDA	42	31	0.086 - 0.11	0.22	0.5				
Estuarine Sediment	PFDoA	42	17	0.086 - 0.11	0.15	0.47				
Estuarine Sediment	PFHpA	42	2	0.086 - 0.11	0.099	0.17				
Estuarine Sediment	PFHxA	42	2	0.086 - 0.11	0.099	0.15				
Estuarine Sediment	PFHxS	42	0	0.17 - 0.22	0.2	0	0.020	0.020	10	10
Estuarine Sediment	PFNA	42	29	0.086 - 0.11	0.17	0.56	700	700	0.00024	0.00024
Estuarine Sediment	PFOA	42	31	0.086 - 0.11	0.2	1.1				
Estuarine Sediment	PFOS	42	69	0.17 - 0.27	2	3.4	13.5	13.5	0.15	0.15
Estuarine Sediment	PFOSA	42	17	0.086 - 0.11	0.17	0.86				
Estuarine Sediment	PFPeA	42	0	0.086 - 0.11	0.099	0				
Estuarine Sediment	PFUnA	42	14	0.086 - 0.11	0.12	0.22				

Appendix C: Occurrence data, toxicity thresholds, and risk quotients for key CEC classes in California Biota

Table C.1: Occurrence data, toxicity thresholds, and risk quotients for alkylphenols and alkylphenol ethoxylates in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	4-Nonylphenol	ww	2	100	0.34 - 0.451	94	94	8700	0.011
Estuarine Bivalve	Nonylphenol diethoxylate (NP2EO)	ww	1	100	0.5 - 0.504	190	190		
Estuarine Bivalve	Nonylphenol monoethoxylate (NP1EO)	ww	2	50	7.3 - 16.9	41	41		

Table C.2: Occurrence data, toxicity thresholds, and risk quotients for bisphenols in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	Bisphenol A	ww	5	0	460 - 1450	480	0		

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	PBDE 007	dw	63	79	0.00059 - 0.023	0.036	0.052	100	0.00036
Estuarine Bivalve	PBDE 008	dw	74	84	0.00059 - 0.0127	0.038	0.095	100	0.00038
Estuarine Bivalve	PBDE 010	dw	74	0	0.00059 - 0.00886	0.002	0	100	0.000020
Estuarine Bivalve	PBDE 011	dw	9	89	NA		0	100	
Estuarine Bivalve	PBDE 012	dw	74	57	0.00059 - 0.00544	0.0075	0.016	100	0.000075
Estuarine Bivalve	PBDE 013	dw	9	89	NA		0	100	
Estuarine Bivalve	PBDE 015	dw	74	96	0.00056 - 0.00462	0.051	0.12	100	0.00051
Estuarine Bivalve	PBDE 017	dw	100	70	0.00064 - 1.42	0.77	1.7	100	0.0077
Estuarine Bivalve	PBDE 017	ww	4	0	0.77 - 1.57	1.1	0	100	0.011
Estuarine Bivalve	PBDE 025	dw	29	28	0.12 - 1.7	0.95	0	100	0.0095
Estuarine Bivalve	PBDE 028	dw	105	70	0.00064 - 1.7	0.36	0.88	100	0.0036
Estuarine Bivalve	PBDE 028	ww	4	0	0.82 - 1.67	1.2	0	100	0.012
Estuarine Bivalve	PBDE 030	dw	95	0	0.00066 - 1.39	0.007	0	100	0.000070
Estuarine Bivalve	PBDE 032	dw	74	50	0.00064 - 0.0146	0.012	0.016	100	0.00012
Estuarine Bivalve	PBDE 033	dw	29	28	0.15 - 1.39	0.75	0	100	0.0075
Estuarine Bivalve	PBDE 035	dw	74	45	0.00064 - 0.019	0.015	0.036	100	0.00015
Estuarine Bivalve	PBDE 037	dw	67	72	0.00064 - 0.028	0.027	0.13	100	0.00027
Estuarine Bivalve	PBDE 047	dw	117	100	0.00049 - 2.59	18	54	100	0.18
Estuarine Bivalve	PBDE 047	ww	4	100	1.1 - 2.2	38	38	100	0.38
Estuarine Bivalve	PBDE 049	dw	111	92	0.00049 - 2.13	1.8	7	100	0.018
Estuarine Bivalve	PBDE 051	dw	73	99	0.00049 - 0.008	0.26	0.89	100	0.0026
Estuarine Bivalve	PBDE 066	dw	117	67	0.00049 - 1.96	0.57	2.1	100	0.0057
Estuarine Bivalve	PBDE 066	ww	4	50	0.74 - 1.52	1.5	1.5	100	0.015
Estuarine Bivalve	PBDE 071	dw	73	92	0.00049 - 0.074	0.18	0.5	100	0.0018
Estuarine Bivalve	PBDE 075	dw	74	77	0.00049 - 0.089	0.045	0.15	100	0.00045
Estuarine Bivalve	PBDE 077	dw	74	41	0.00049 - 0.017	0.017	0.059	100	0.00017
Estuarine Bivalve	PBDE 079	dw	64	44	0.00057 - 0.169	0.061	0.16	100	0.00061

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	PBDE 085	dw	114	61	0.0012 - 3	0.23	1.7	100	0.0023
Estuarine Bivalve	PBDE 085	ww	4	0	0.98 - 1.99	1.4	0	100	0.014
Estuarine Bivalve	PBDE 099	dw	113	98	0.00089 - 1.99	6.9	18	100	0.069
Estuarine Bivalve	PBDE 099	ww	4	100	1.1 - 2.22	19	19	100	0.19
Estuarine Bivalve	PBDE 100	dw	117	94	0.00073 - 2.46	7.2	29	100	0.072
Estuarine Bivalve	PBDE 100	ww	4	100	0.87 - 1.77	9.3	9.3	100	0.093
Estuarine Bivalve	PBDE 105	dw	73	0	0.0017 - 0.0382	0.014	0	100	0.00014
Estuarine Bivalve	PBDE 116	dw	74	3	0.0023 - 0.0513	0.019	0.057	100	0.00019
Estuarine Bivalve	PBDE 119	dw	74	77	0.0018 - 0.0698	0.14	0.64	100	0.0014
Estuarine Bivalve	PBDE 120	dw	8	100	NA			100	
Estuarine Bivalve	PBDE 126	dw	74	34	0.00099 - 0.0236	0.027	0.087	100	0.00027
Estuarine Bivalve	PBDE 128	dw	73	15	7e-04 - 0.115	0.01	0.026	100	0.00010
Estuarine Bivalve	PBDE 138	dw	117	51	0.00049 - 2.02	0.039	0.12	100	0.00039
Estuarine Bivalve	PBDE 138	ww	4	0	1.1 - 2.25	1.6	0	100	0.016
Estuarine Bivalve	PBDE 140	dw	73	82	0.00049 - 0.018	0.11	0.39	100	0.0011
Estuarine Bivalve	PBDE 153	dw	114	77	0.00049 - 1.87	0.8	2.5	100	0.0080
Estuarine Bivalve	PBDE 153	ww	4	0	1 - 2.09	1.4	0	100	0.014
Estuarine Bivalve	PBDE 154	dw	115	79	0.00049 - 1.74	0.98	3.1	100	0.0098
Estuarine Bivalve	PBDE 154	ww	4	75	0.91 - 1.85	1.8	1.8	100	0.018
Estuarine Bivalve	PBDE 155	dw	74	95	0.00049 - 0.0532	0.4	0.96	100	0.0040
Estuarine Bivalve	PBDE 166	dw	9	89	NA		0	100	
Estuarine Bivalve	PBDE 179	dw	21	0	0.15 - 2.43	1.3	0	100	0.013
Estuarine Bivalve	PBDE 181	dw	74	32	0.00064 - 0.0274	0.0064	0.025	100	0.000064
Estuarine Bivalve	PBDE 183	dw	98	28	0.00064 - 3.96	0.028	0.086	100	0.00028
Estuarine Bivalve	PBDE 183	ww	4	0	1.6 - 3.35	2.3	0	100	0.023
Estuarine Bivalve	PBDE 184	dw	21	0	0.21 - 2.28	0.88	0	100	0.0088
Estuarine Bivalve	PBDE 188	dw	21	0	0.34 - 3.25	1.2	0	100	0.012

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	PBDE 190	dw	101	7	0.00083 - 4.41	0.0057	0.012	100	0.000057
Estuarine Bivalve	PBDE 190	ww	4	0	2.4 - 4.92	3.4	0	100	0.034
Estuarine Bivalve	PBDE 196	dw	17	0	0.2 - 0.2	0.2	0	100	0.0020
Estuarine Bivalve	PBDE 197	dw	44	45	0.00064 - 0.2	0.071	0.11	100	0.00071
Estuarine Bivalve	PBDE 200	dw	21	0	0.24 - 3.39	1.9	0	100	0.019
Estuarine Bivalve	PBDE 201	dw	38	3	0.14 - 2.28	0.78	0.86	100	0.0078
Estuarine Bivalve	PBDE 202	dw	38	0	0.2 - 2.84	1.4	0	100	0.014
Estuarine Bivalve	PBDE 203	dw	81	26	0.00064 - 1.81	0.081	1.1	100	0.00081
Estuarine Bivalve	PBDE 204	dw	9	89	NA		0	100	
Estuarine Bivalve	PBDE 205	dw	74	4	0.001 - 0.097	0.0074	0.012	100	0.000074
Estuarine Bivalve	PBDE 206	dw	89	30	0.00082 - 7.95	0.24	15	100	0.0024
Estuarine Bivalve	PBDE 207	dw	69	38	0.00077 - 12.3	2.9	52	100	0.029
Estuarine Bivalve	PBDE 208	dw	90	31	0.00098 - 9.67	0.23	6.5	100	0.0023
Estuarine Bivalve	PBDE 209	dw	67	42	0.038 - 30.6	11	34	100	0.11
Estuarine Fish	PBDE 017	ww	192	6	0.05 - 0.158	0.12	1	100	0.0012
Estuarine Fish	PBDE 025	ww	79	0	0.12 - 0.148	0.15	0	100	0.0015
Estuarine Fish	PBDE 028	ww	192	44	0.05 - 0.169	0.2	4.4	100	0.0020
Estuarine Fish	PBDE 030	ww	107	0	0.05 - 0.121	0.12	0	100	0.0012
Estuarine Fish	PBDE 033	ww	79	0	0.095 - 0.147	0.096	0	100	0.00096
Estuarine Fish	PBDE 047	ww	199	100	9.8e-05 - 19.8	20	220	100	0.20
Estuarine Fish	PBDE 049	ww	107	91	0.05 - 0.224	1.6	2.2	100	0.016
Estuarine Fish	PBDE 066	ww	187	40	0.05 - 0.17	0.13	1.2	100	0.0013
Estuarine Fish	PBDE 085	ww	192	1	0.1 - 0.26	0.18	0.12	100	0.0018
Estuarine Fish	PBDE 099	ww	140	69	0.00082 - 0.225	3.9	16	100	0.039
Estuarine Fish	PBDE 100	ww	199	96	0.00051 - 1.73	3.6	21	100	0.036
Estuarine Fish	PBDE 138	ww	192	1	0.1 - 0.228	0.15	0.19	100	0.0015
Estuarine Fish	PBDE 153	ww	199	30	0.00023 - 0.211	0.21	4.5	100	0.0021

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Fish	PBDE 154	ww	199	70	0.00012 - 0.2	1.1	4.2	100	0.011
Estuarine Fish	PBDE 179	ww	107	0	0.15 - 0.39	0.21	0	100	0.0021
Estuarine Fish	PBDE 183	ww	193	1	0.0072 - 0.39	0.3	0.11	100	0.0030
Estuarine Fish	PBDE 184	ww	107	0	0.11 - 0.39	0.11	0	100	0.0011
Estuarine Fish	PBDE 188	ww	107	0	0.15 - 0.39	0.15	0	100	0.0015
Estuarine Fish	PBDE 190	ww	192	0	0.19 - 0.498	0.26	0	100	0.0026
Estuarine Fish	PBDE 200	ww	107	0	0.16 - 0.39	0.16	0	100	0.0016
Estuarine Fish	PBDE 201	ww	107	3	0.14 - 0.39	0.14	0.14	100	0.0014
Estuarine Fish	PBDE 202	ww	107	0	0.19 - 0.39	0.24	0	100	0.0024
Estuarine Fish	PBDE 203	ww	79	6	0.16 - 0.294	0.29	0.16	100	0.0029
Estuarine Fish	PBDE 206	ww	107	2	0.48 - 0.98	0.6	0.84	100	0.0060
Estuarine Fish	PBDE 207	ww	107	6	0.48 - 1.07	1.1	3.6	100	0.011
Estuarine Fish	PBDE 208	ww	107	0	0.48 - 0.98	0.83	0	100	0.0083
Estuarine Fish	PBDE 209	ww	107	2	1.9 - 3.91	2.6	2.6	100	0.026
Freshwater Bivalve	PBDE 001	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 002	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 007	dw	9	11	8.1 - 8.1	8.1	1.3	100	0.081
Freshwater Bivalve	PBDE 008	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 010	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 011	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 012	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 013	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 015	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 017	dw	9	11	8.1 - 8.1	8.1	3.7	100	0.081
Freshwater Bivalve	PBDE 025	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 028	dw	9	0	7.2 - 7.2	7.2	0	100	0.072
Freshwater Bivalve	PBDE 030	dw	9	0	8.1 - 8.1	8.1	0	100	0.081

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Freshwater Bivalve	PBDE 032	dw	9	22	8.1 - 8.1	8.1	2.4	100	0.081
Freshwater Bivalve	PBDE 033	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 035	dw	9	0	8.1 - 8.1	8.1	0	100	0.081
Freshwater Bivalve	PBDE 037	dw	9	11	8.1 - 8.1	8.1	8	100	0.081
Freshwater Bivalve	PBDE 047	dw	9	67	7.9 - 7.9	20	54	100	0.20
Freshwater Bivalve	PBDE 049	dw	9	22	8.5 - 8.5	8.5	8.6	100	0.085
Freshwater Bivalve	PBDE 066	dw	9	0	9.4 - 9.4	9.4	0	100	0.094
Freshwater Bivalve	PBDE 075	dw	9	0	8.5 - 8.5	8.5	0	100	0.085
Freshwater Bivalve	PBDE 077	dw	9	11	8.5 - 8.5	8.5	0.9	100	0.085
Freshwater Bivalve	PBDE 085	dw	9	0	9.2 - 9.2	9.2	0	100	0.092
Freshwater Bivalve	PBDE 099	dw	9	56	7.3 - 7.3	9.5	31	100	0.095
Freshwater Bivalve	PBDE 100	dw	9	22	11 - 10.9	11	13	100	0.11
Freshwater Bivalve	PBDE 116	dw	9	0	11 - 10.9	11	0	100	0.11
Freshwater Bivalve	PBDE 118	dw	9	0	11 - 10.9	11	0	100	0.11
Freshwater Bivalve	PBDE 119	dw	9	0	11 - 10.9	11	0	100	0.11
Freshwater Bivalve	PBDE 126	dw	9	0	11 - 10.9	11	0	100	0.11
Freshwater Bivalve	PBDE 138	dw	9	0	19 - 19.1	19	0	100	0.19
Freshwater Bivalve	PBDE 153	dw	9	0	10 - 10.3	10	0	100	0.10
Freshwater Bivalve	PBDE 154	dw	9	22	12 - 12.2	12	2.2	100	0.12
Freshwater Bivalve	PBDE 155	dw	9	0	12 - 12.2	12	0	100	0.12
Freshwater Bivalve	PBDE 166	dw	9	0	12 - 12.2	12	0	100	0.12
Freshwater Bivalve	PBDE 181	dw	9	0	14 - 13.6	14	0	100	0.14
Freshwater Bivalve	PBDE 183	dw	9	0	14 - 13.6	14	0	100	0.14
Freshwater Bivalve	PBDE 190	dw	9	11	14 - 13.6	14	5.4	100	0.14
Freshwater Bivalve	PBDE 194	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 195	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 196	dw	8	0	NA		0	100	

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Freshwater Bivalve	PBDE 197	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 198	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 201	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 202	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 204	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 205	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 206	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 207	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 208	dw	8	0	NA		0	100	
Freshwater Bivalve	PBDE 209	dw	8	0	NA		0	100	
Freshwater Fish	PBDE 015	ww	19	0	0.8 - 0.795	0.8	0	100	0.0080
Freshwater Fish	PBDE 017	ww	322	21	0.046 - 0.139	0.049	0.14	100	0.00049
Freshwater Fish	PBDE 028	ww	329	49	0.048 - 0.148	0.15	5.7	100	0.0015
Freshwater Fish	PBDE 030	ww	5	0	0.048 - 0.05	0.049	0	100	0.00049
Freshwater Fish	PBDE 033	ww	19	0	0.05 - 0.05	0.05	0	100	0.00050
Freshwater Fish	PBDE 047	ww	343	77	0.048 - 4.1	8	96	100	0.080
Freshwater Fish	PBDE 049	ww	24	71	0.048 - 0.05	0.23	0.77	100	0.0023
Freshwater Fish	PBDE 066	ww	315	21	0.036 - 0.135	0.039	0.5	100	0.00039
Freshwater Fish	PBDE 075	ww	19	0	0.036 - 0.036	0.036	0	100	0.00036
Freshwater Fish	PBDE 085	ww	314	7	0.062 - 0.177	0.067	0.18	100	0.00067
Freshwater Fish	PBDE 099	ww	344	34	0.05 - 0.197	0.15	6.6	100	0.0015
Freshwater Fish	PBDE 100	ww	341	79	0.036 - 3.26	1.7	12	100	0.017
Freshwater Fish	PBDE 138	ww	16	0	0.096 - 0.2	0.2	0	100	0.0020
Freshwater Fish	PBDE 153	ww	35	63	0.017 - 0.185	0.18	0.98	100	0.0018
Freshwater Fish	PBDE 154	ww	35	71	0.017 - 0.165	1.2	2.7	100	0.012
Freshwater Fish	PBDE 155	ww	19	21	0.02 - 0.02	0.023	0.085	100	0.00023
Freshwater Fish	PBDE 179	ww	5	0	0.19 - 0.198	0.2	0	100	0.0020

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Freshwater Fish	PBDE 183	ww	35	0	0.03 - 0.297	0.03	0	100	0.00030
Freshwater Fish	PBDE 184	ww	5	0	0.19 - 0.198	0.2	0	100	0.0020
Freshwater Fish	PBDE 188	ww	5	0	0.19 - 0.198	0.2	0	100	0.0020
Freshwater Fish	PBDE 190	ww	16	0	0.19 - 0.437	0.43	0	100	0.0043
Freshwater Fish	PBDE 200	ww	5	0	0.19 - 0.198	0.2	0	100	0.0020
Freshwater Fish	PBDE 201	ww	5	0	0.19 - 0.198	0.2	0	100	0.0020
Freshwater Fish	PBDE 202	ww	5	0	0.19 - 0.198	0.2	0	100	0.0020
Freshwater Fish	PBDE 206	ww	5	0	0.48 - 0.495	0.49	0	100	0.0049
Freshwater Fish	PBDE 207	ww	5	0	0.48 - 0.495	0.49	0	100	0.0049
Freshwater Fish	PBDE 208	ww	5	0	0.48 - 0.495	0.49	0	100	0.0049
Freshwater Fish	PBDE 209	ww	5	0	1.9 - 1.98	2	0	100	0.020
Marine Bivalve	PBDE 001	dw	89	1	0.4 - 8.1	0.4	16	100	0.0040
Marine Bivalve	PBDE 002	dw	89	1	0.4 - 8.1	0.4	0.6	100	0.0040
Marine Bivalve	PBDE 007	dw	129	13	6e-04 - 8.1	0.4	23	100	0.0040
Marine Bivalve	PBDE 007	ww	6	100	NA	0.0029	0.0029	100	0.000029
Marine Bivalve	PBDE 008	dw	134	11	6e-04 - 8.1	0.4	0.0031	100	0.0040
Marine Bivalve	PBDE 008	ww	6	100	NA	0.0025	0.0025	100	0.000025
Marine Bivalve	PBDE 010	dw	129	2	6e-04 - 8.1	0.4	1.8	100	0.0040
Marine Bivalve	PBDE 010	ww	6	100	NA			100	
Marine Bivalve	PBDE 011	dw	124	2	0.4 - 8.1	0.4	3.5	100	0.0040
Marine Bivalve	PBDE 011	ww	6	100	NA			100	
Marine Bivalve	PBDE 012	dw	134	14	6e-04 - 8.1	0.4	7.4	100	0.0040
Marine Bivalve	PBDE 012	ww	6	100	NA			100	
Marine Bivalve	PBDE 013	dw	124	2	0.4 - 8.1	0.4	4.2	100	0.0040
Marine Bivalve	PBDE 013	ww	6	100	NA			100	
Marine Bivalve	PBDE 015	dw	129	20	6e-04 - 8.1	0.4	22	100	0.0040
Marine Bivalve	PBDE 015	ww	6	100	NA	0.006	0.006	100	0.000060

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Bivalve	PBDE 017	dw	137	31	0.001 - 8.1	0.4	2.9	100	0.0040
Marine Bivalve	PBDE 017	ww	6	100	NA	0.014	0.061	100	0.00014
Marine Bivalve	PBDE 025	dw	126	0	0.4 - 8.1	0.4	0	100	0.0040
Marine Bivalve	PBDE 025	ww	6	100	NA			100	
Marine Bivalve	PBDE 028	dw	137	38	8e-04 - 7.2	0.4	4.2	100	0.0040
Marine Bivalve	PBDE 028	ww	6	100	NA	0.024	0.077	100	0.00024
Marine Bivalve	PBDE 030	dw	131	2	0.001 - 8.1	0.4	6.1	100	0.0040
Marine Bivalve	PBDE 030	ww	6	100	NA			100	
Marine Bivalve	PBDE 032	dw	129	37	8e-04 - 8.1	2.2	17	100	0.0220
Marine Bivalve	PBDE 032	ww	6	100	NA			100	
Marine Bivalve	PBDE 033	dw	126	2	0.4 - 8.1	0.4	6.8	100	0.0040
Marine Bivalve	PBDE 033	ww	6	100	NA			100	
Marine Bivalve	PBDE 035	dw	129	24	6e-04 - 8.1	0.4	5.2	100	0.0040
Marine Bivalve	PBDE 035	ww	6	100	NA	0.007	0.0095	100	0.000070
Marine Bivalve	PBDE 037	dw	129	24	6e-04 - 8.1	0.4	130	100	0.0040
Marine Bivalve	PBDE 037	ww	6	100	NA	0.0071	0.0071	100	0.000071
Marine Bivalve	PBDE 047	dw	132	83	6e-04 - 7.9	18	68	100	0.18
Marine Bivalve	PBDE 047	ww	6	100	NA	0.79	2	100	0.0079
Marine Bivalve	PBDE 049	dw	131	37	6e-04 - 8.5	2.3	9.5	100	0.023
Marine Bivalve	PBDE 049	ww	6	100	NA	0.088	0.22	100	0.00088
Marine Bivalve	PBDE 051	dw	40	98	6e-04 - 0.00489	0.017	0.029	100	0.00017
Marine Bivalve	PBDE 051	ww	6	100	NA	0.0049	0.024	100	0.000049
Marine Bivalve	PBDE 066	dw	132	39	6e-04 - 9.4	0.3	17	100	0.0030
Marine Bivalve	PBDE 066	ww	6	100	NA	0.035	0.12	100	0.00035
Marine Bivalve	PBDE 071	dw	40	80	6e-04 - 0.00612	0.021	0.24	100	0.00021
Marine Bivalve	PBDE 071	ww	6	100	NA	0.0011	0.0011	100	0.000011
Marine Bivalve	PBDE 075	dw	129	30	6e-04 - 8.5	0.5	5.2	100	0.0050

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Bivalve	PBDE 075	ww	6	100	NA	0.0026	0.01	100	0.000026
Marine Bivalve	PBDE 077	dw	129	25	6e-04 - 8.5	2	70	100	0.020
Marine Bivalve	PBDE 077	ww	6	100	NA	0.0017	0.0017	100	0.000017
Marine Bivalve	PBDE 079	dw	40	50	6e-04 - 0.0108	0.017	0.034	100	0.00017
Marine Bivalve	PBDE 079	ww	6	100	NA			100	
Marine Bivalve	PBDE 085	dw	132	33	0.0014 - 9.2	0.9	2.8	100	0.0090
Marine Bivalve	PBDE 085	ww	6	100	NA	0.022	0.063	100	0.00022
Marine Bivalve	PBDE 099	dw	132	70	9e-04 - 14.039	6.3	38	100	0.063
Marine Bivalve	PBDE 099	ww	6	100	NA	0.49	1.4	100	0.0049
Marine Bivalve	PBDE 100	dw	132	57	6e-04 - 10.9	3.4	15	100	0.034
Marine Bivalve	PBDE 100	ww	6	100	NA	0.18	0.6	100	0.0018
Marine Bivalve	PBDE 105	dw	40	0	0.0016 - 0.013	0.004	0	100	0.000040
Marine Bivalve	PBDE 105	ww	6	100	NA			100	
Marine Bivalve	PBDE 116	dw	129	2	0.0022 - 10.9	0.4	0.0076	100	0.0040
Marine Bivalve	PBDE 116	ww	6	100	NA	0.0035	0.0035	100	0.000035
Marine Bivalve	PBDE 118	dw	89	0	0.4 - 10.9	0.4	0	100	0.0040
Marine Bivalve	PBDE 119	dw	134	23	0.0014 - 10.9	0.4	0.7	100	0.0040
Marine Bivalve	PBDE 119	ww	6	100	NA	0.013	0.013	100	0.00013
Marine Bivalve	PBDE 120	dw	35	0	NA		0	100	
Marine Bivalve	PBDE 120	ww	6	100	NA			100	
Marine Bivalve	PBDE 126	dw	129	4	8e-04 - 10.9	0.4	2.5	100	0.0040
Marine Bivalve	PBDE 126	ww	6	100	NA	0.0036	0.0036	100	0.000036
Marine Bivalve	PBDE 128	dw	40	0	0.0021 - 0.0288	0.0098	0	100	0.000098
Marine Bivalve	PBDE 128	ww	6	100	NA			100	
Marine Bivalve	PBDE 138	dw	137	20	6e-04 - 19.1	0.3	0.06	100	0.0030
Marine Bivalve	PBDE 138	ww	6	100	NA	0.022	0.022	100	0.00022
Marine Bivalve	PBDE 140	dw	40	58	6e-04 - 0.00676	0.0071	0.02	100	0.000071

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Bivalve	PBDE 140	ww	6	100	NA	0.0082	0.0082	100	0.000082
Marine Bivalve	PBDE 153	dw	132	39	6e-04 - 10.3	0.3	2.8	100	0.0030
Marine Bivalve	PBDE 153	ww	6	100	NA	0.025	0.086	100	0.00025
Marine Bivalve	PBDE 154	dw	132	38	6e-04 - 12.2	0.4	1.3	100	0.0040
Marine Bivalve	PBDE 154	ww	6	100	NA	0.014	0.053	100	0.00014
Marine Bivalve	PBDE 155	dw	129	31	6e-04 - 12.2	0.3	5.4	100	0.0030
Marine Bivalve	PBDE 155	ww	6	100	NA	0.0069	0.027	100	0.000069
Marine Bivalve	PBDE 166	dw	124	0	0.3 - 12.2	0.3	0	100	0.0030
Marine Bivalve	PBDE 166	ww	6	100	NA			100	
Marine Bivalve	PBDE 179	dw	2	0	1.1 - 1.27	1.2	0	100	0.012
Marine Bivalve	PBDE 181	dw	129	5	6e-04 - 13.6	0.3	0.0045	100	0.0030
Marine Bivalve	PBDE 181	ww	6	100	NA			100	
Marine Bivalve	PBDE 183	dw	132	27	6e-04 - 13.6	0.3	2.3	100	0.0030
Marine Bivalve	PBDE 183	ww	6	100	NA	0.0049	0.0088	100	0.000049
Marine Bivalve	PBDE 184	dw	2	0	0.58 - 1.76	1.2	0	100	0.012
Marine Bivalve	PBDE 188	dw	2	0	0.79 - 2.87	1.8	0	100	0.018
Marine Bivalve	PBDE 190	dw	132	12	6e-04 - 13.6	0.2	1.9	100	0.0020
Marine Bivalve	PBDE 190	ww	6	100	NA			100	
Marine Bivalve	PBDE 194	dw	75	0	0.2 - 0.2	0.2	0	100	0.0020
Marine Bivalve	PBDE 195	dw	75	1	0.2 - 0.2	0.2	0.3	100	0.0020
Marine Bivalve	PBDE 196	dw	75	0	0.2 - 0.2	0.2	0	100	0.0020
Marine Bivalve	PBDE 197	dw	75	0	0.2 - 0.2	0.2	0	100	0.0020
Marine Bivalve	PBDE 198	dw	75	0	0.2 - 0.2	0.2	0	100	0.0020
Marine Bivalve	PBDE 200	dw	2	0	1.5 - 2.06	1.8	0	100	0.018
Marine Bivalve	PBDE 201	dw	77	1	0.2 - 1.14	0.2	0.71	100	0.0020
Marine Bivalve	PBDE 202	dw	77	0	0.2 - 2.46	0.2	0	100	0.0020
Marine Bivalve	PBDE 203	dw	42	76	6e-04 - 1.31	0.022	0.82	100	0.00022

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Bivalve	PBDE 203	ww	6	100	NA	0.0068	0.0068	100	0.000068
Marine Bivalve	PBDE 204	dw	75	0	0.2 - 0.2	0.2	0	100	0.0020
Marine Bivalve	PBDE 205	dw	75	25	0.2 - 0.2	0.9	1.1	100	0.0090
Marine Bivalve	PBDE 206	dw	117	31	6e-04 - 7.02	0.048	0.32	100	0.00048
Marine Bivalve	PBDE 206	ww	6	100	NA	0.02	0.021	100	0.00020
Marine Bivalve	PBDE 207	dw	117	47	6e-04 - 8.93	1.4	8.9	100	0.014
Marine Bivalve	PBDE 207	ww	6	100	NA	0.027	0.032	100	0.00027
Marine Bivalve	PBDE 208	dw	117	33	6e-04 - 5.03	0.096	0.7	100	0.00096
Marine Bivalve	PBDE 208	ww	6	100	NA	0.016	0.017	100	0.00016
Marine Bivalve	PBDE 209	dw	117	32	0.026 - 22.2	1	4.1	100	0.010
Marine Bivalve	PBDE 209	ww	6	100	NA	0.18	0.19	100	0.0018
Marine Fish	PBDE 017	ww	4	25	0.05 - 0.05	5.2	5.2	100	0.052
Marine Fish	PBDE 028	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 030	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 047	ww	6	100	0.05 - 0.05	6.6	14	100	0.066
Marine Fish	PBDE 066	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 085	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 099	ww	6	83	0.05 - 0.05	0.43	0.51	100	0.0043
Marine Fish	PBDE 100	ww	6	83	0.05 - 0.05	1.5	1.8	100	0.015
Marine Fish	PBDE 138	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 153	ww	6	50	0.05 - 0.05	0.25	0.29	100	0.0025
Marine Fish	PBDE 154	ww	6	83	0.05 - 0.05	0.55	0.74	100	0.0055
Marine Fish	PBDE 179	ww	6	83	0.05 - 0.05	0.23	0.24	100	0.0023
Marine Fish	PBDE 183	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 184	ww	6	83	0.05 - 0.05	0.18	0.27	100	0.0018
Marine Fish	PBDE 188	ww	6	67	0.05 - 0.05	0.28	0.43	100	0.0028
Marine Fish	PBDE 190	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050

Table C.5a: Occurrence data, toxicity thresholds, and risk quotients for PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. NA = Not Available (when MDL is not recorded). Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Fish	PBDE 200	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 201	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 202	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 203	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 206	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 207	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 208	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050
Marine Fish	PBDE 209	ww	6	0	0.05 - 0.05	0.05	0	100	0.00050

Table C.5b: Occurrence data, toxicity thresholds, and risk quotients for brominated flame retardants other than PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	1,2-Bis(2,4,6-tribromophenoxy)ethane	dw	16	25	0.1 - 0.1	0.3	0.48		
Estuarine Bivalve	2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate	dw	16	0	0.2 - 0.2	0.2	0		
Estuarine Bivalve	2,4,6-Tribromophenyl allyl ether	dw	16	25	0.1 - 0.1	0.12	0.26		
Estuarine Bivalve	Bis(2-ethylhexyl)tetrabromophthalate	dw	16	31	0.15 - 0.15	0.19	0.2		
Estuarine Bivalve	Dechlorane 604 (total)	dw	16	0	0.2 - 0.2	0.2	0		
Estuarine Bivalve	Dibromo-4-(1,2-dibromoethyl)cyclohexane, alpha-1,2-	dw	16	0	0.2 - 0.2	0.2	0		
Estuarine Bivalve	Dibromo-4-(1,2-dibromoethyl)cyclohexane, beta-1,2-	dw	16	12	0.2 - 0.2	0.2	0.82		
Estuarine Bivalve	Dibromo-4-(1,2-dibromoethyl)cyclohexane, gamma-1,2-	dw	16	0	0.2 - 0.2	0.2	0		
Estuarine Bivalve	Hexabromobenzene	dw	16	31	0.1 - 0.1	0.62	0.93		
Estuarine Bivalve	Hexabromocyclododecane, alpha-	dw	16	69	0.1 - 0.1	0.42	1.3		
Estuarine Bivalve	Hexabromocyclododecane, beta-	dw	16	19	0.1 - 0.1	0.1	0.17		
Estuarine Bivalve	Hexabromocyclododecane, gamma-	dw	16	44	0.1 - 0.1	0.18	0.46		
Estuarine Bivalve	Hexachlorocyclopentadienyldibromocyclooctane	dw	16	0	0.4 - 0.4	0.4	0		
Estuarine Bivalve	Pentabromobenzene	dw	16	0	0.1 - 0.1	0.1	0		
Estuarine Bivalve	Pentabromobenzyl acrylate	dw	16	0	0.3 - 0.3	0.3	0		
Estuarine Bivalve	Pentabromobenzyl bromide/Pentabromotoluene	dw	16	0	0.2 - 0.2	0.2	0		
Estuarine Bivalve	Tetrabromo-o-chlorotoluene	dw	16	0	0.3 - 0.3	0.3	0		
Estuarine Bivalve	Tetrabromo-p-xylene	dw	16	0	0.2 - 0.2	0.2	0		
Estuarine Bivalve	Tris(2,3-dibromopropyl) phosphate	dw	16	12	0.8 - 0.8	0.8	2		
Estuarine Bivalve	PBB 101	dw	16	88	0.1 - 0.1	0.94	1.3		
Marine Bivalve	PBB 001	dw	35	0	2.1 - 2.1	2.1	0		
Marine Bivalve	PBB 002	dw	35	0	3 - 3	3	0		
Marine Bivalve	PBB 003	dw	35	0	2.7 - 2.7	2.7	0		
Marine Bivalve	PBB 004	dw	35	0	2.4 - 2.4	2.4	0		
Marine Bivalve	PBB 007	dw	35	0	1.9 - 1.9	1.9	0		
Marine Bivalve	PBB 009	dw	35	0	2.4 - 2.4	2.4	0		
Marine Bivalve	PBB 010	dw	35	0	2.3 - 2.3	2.3	0		
Marine Bivalve	PBB 015	dw	35	0	3.2 - 3.2	3.2	0		
Marine Bivalve	PBB 018	dw	35	0	4.2 - 4.2	4.2	0		
Marine Bivalve	PBB 026	dw	35	0	2.6 - 2.6	2.6	0		
Marine Bivalve	PBB 030	dw	35	0	2.4 - 2.4	2.4	0		
Marine Bivalve	PBB 031	dw	35	0	3 - 3	3	0		

Table C.5b: Occurrence data, toxicity thresholds, and risk quotients for brominated flame retardants other than PBDEs in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Bivalve	PBB 049	dw	35	0	2.5 - 2.5	2.5	0		
Marine Bivalve	PBB 052	dw	35	0	4.4 - 4.4	4.4	0		
Marine Bivalve	PBB 053	dw	35	0	3.2 - 3.2	3.2	0		
Marine Bivalve	PBB 077	dw	35	0	2.5 - 2.5	2.5	0		
Marine Bivalve	PBB 080	dw	35	0	2.6 - 2.6	2.6	0		
Marine Bivalve	PBB 103	dw	35	0	3.4 - 3.4	3.4	0		
Marine Bivalve	PBB 155	dw	35	0	5.8 - 5.8	5.8	0		

Table C.9: Occurrence data, toxicity thresholds, and risk quotients for PFAS in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Bivalve	N-EtFOSA	ww	5	0	3.2 - 7.94	6.2	0		
Estuarine Bivalve	N-MeFOSA	ww	5	0	3.9 - 9.88	6.5	0		
Estuarine Bivalve	PFBA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFBS	ww	5	0	4.5 - 4.98	4.6	0	0.22	21
Estuarine Bivalve	PFDA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFDoA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFHpA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFHxA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFHxS	ww	5	20	4.5 - 4.98	4.6	5.5	0.22	21
Estuarine Bivalve	PFNA	ww	5	0	2.3 - 2.49	2.3	0	0.22	10
Estuarine Bivalve	PFOA	ww	6	0	2.3 - 2.49	2.3	0	0.22	10
Estuarine Bivalve	PFOS	ww	6	17	4.5 - 4.98	4.6	76	0.22	21
Estuarine Bivalve	PFOSA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFPeA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Bivalve	PFUnA	ww	5	0	2.3 - 2.49	2.3	0		
Estuarine Fish	N-EtFOSA	ww	15	0	1.8 - 14.7	8.6	0		
Estuarine Fish	N-MeFOSA	ww	15	0	4.6 - 23.5	11	0		
Estuarine Fish	PFBA	ww	87	1	0.48 - 2.5	0.7	0		
Estuarine Fish	PFBS	ww	87	0	0.97 - 5	1	0	0.22	4.5
Estuarine Fish	PFDA	ww	87	31	0.48 - 2.5	1.9	4.6		
Estuarine Fish	PFDoA	ww	87	28	0.48 - 2.5	1.3	4.2		
Estuarine Fish	PFHpA	ww	87	0	0.48 - 2.5	0.5	0		
Estuarine Fish	PFHxA	ww	87	0	0.48 - 2.5	0.5	0		
Estuarine Fish	PFHxS	ww	87	10	0.97 - 5	1.5	9.8	0.22	6.8
Estuarine Fish	PFNA	ww	87	20	0.48 - 2.5	1.6	10	0.22	7.3
Estuarine Fish	PFOA	ww	87	13	0.48 - 10	0.77	15	0.22	3.5
Estuarine Fish	PFOS	ww	87	64	0.97 - 5	29	240	0.22	132
Estuarine Fish	PFOSA	ww	87	41	0.58 - 2.5	2.9	16		

Table C.9: Occurrence data, toxicity thresholds, and risk quotients for PFAS in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Estuarine Fish	PFPeA	ww	71	7	0.48 - 2.5	2.4	2.1		
Estuarine Fish	PFUnA	ww	87	15	0.48 - 2.5	0.67	2.3		
Freshwater Bivalve	PFOA	ww	8	0	NA		0	0.22	
Freshwater Bivalve	PFOS	ww	8	0	NA		0	0.22	
Freshwater Fish	PFBA	ww	18	0	0.47 - 0.515	0.5	0		
Freshwater Fish	PFBS	ww	18	0	0.94 - 1.03	1	0	0.22	4.5
Freshwater Fish	PFDA	ww	18	44	0.47 - 0.515	0.96	1.1		
Freshwater Fish	PFDoA	ww	18	28	0.47 - 0.515	0.65	0.76		
Freshwater Fish	PFHpA	ww	18	0	0.47 - 0.515	0.5	0		
Freshwater Fish	PFHxA	ww	18	0	0.47 - 0.515	0.5	0		
Freshwater Fish	PFHxS	ww	18	0	0.94 - 1.03	1	0	0.22	4.5
Freshwater Fish	PFNA	ww	18	0	0.47 - 0.515	0.5	0	0.22	2.3
Freshwater Fish	PFOA	ww	18	0	0.47 - 0.515	0.5	0	0.22	2.3
Freshwater Fish	PFOS	ww	18	100	0.94 - 1.03	7.2	10	0.22	33
Freshwater Fish	PFOSA	ww	18	0	0.57 - 0.619	0.6	0		
Freshwater Fish	PFPeA	ww	18	0	0.47 - 0.515	0.5	0		
Freshwater Fish	PFUnA	ww	18	28	0.47 - 0.515	0.63	0.76		
Marine Bivalve	PFBA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFBA	ww	6	100	NA		0		
Marine Bivalve	PFBS	dw	12	0	4.3 - 4.81	4.7	0	0.22	21
Marine Bivalve	PFBS	ww	6	100	NA		0	0.22	
Marine Bivalve	PFDA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFDA	ww	6	100	NA		0		
Marine Bivalve	PFDoA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFDoA	ww	6	100	NA		0		
Marine Bivalve	PFHpA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFHpA	ww	6	100	NA		0		
Marine Bivalve	PFHxA	dw	13	0	2.2 - 4.81	2.4	0		

Table C.9: Occurrence data, toxicity thresholds, and risk quotients for PFAS in California bivalves and fish. Occurrence data is summarized from California databases. Concentrations are reported in µg/kg on a wet weight (ww) or dry weight (dw) basis. DF = detection frequency. MDL Range = Method Detection Limit Range of summarized records. Q90 = 90th percentile concentration calculated after substituting non-detects with the median detection limit. A zero value reported as the Maximum indicates the result was below detection limit. RQ = risk quotient calculated by dividing Q90 value by the threshold.

Biota	Analyte	Basis	# of Samples	DF (%)	MDL Range	Q90	Maximum	Human Diet Threshold	RQ (Human Diet)
Marine Bivalve	PFHxA	ww	6	100	NA		0		
Marine Bivalve	PFHxS	dw	10	0	4.5 - 4.81	4.7	0	0.22	21
Marine Bivalve	PFHxS	ww	6	100	NA		0	0.22	
Marine Bivalve	PFNA	dw	12	0	2.2 - 2.4	2.4	0	0.22	11
Marine Bivalve	PFNA	ww	6	100	NA		0	0.22	
Marine Bivalve	PFOA	dw	12	0	2.2 - 2.4	2.4	0	0.22	11
Marine Bivalve	PFOA	ww	60	10	NA		0	0.22	
Marine Bivalve	PFOS	dw	12	0	4.3 - 4.81	4.7	0	0.22	21
Marine Bivalve	PFOS	ww	60	12	NA	1.1	1.1	0.22	5.0
Marine Bivalve	PFOSA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFOSA	ww	6	100	NA		0		
Marine Bivalve	PFPeA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFPeA	ww	6	100	NA		0		
Marine Bivalve	PFUnA	dw	12	0	2.2 - 2.4	2.4	0		
Marine Bivalve	PFUnA	ww	6	100	NA		0		

Appendix D: ECHA REACH registration documentation use for risk screening

Table D: ECHA REACH registration documentation used for risk screening.

Compound	Class	Threshold Discussed in Text	Matrix	Source REACH registration dossier link
4-Nonylphenol (mixed isomers)	AP/APEs	0.61 µg/L	Freshwater	https://echa.europa.eu/registration-dossier/-/registered-dossier/15896/1
		0.57 µg/L	Marine water	
		4620 µg/kg dw	Freshwater sediment	
		1230 µg/kg dw	Marine sediment	
4-tert-Octylphenol	AP/APEs	0.632 µg/L	Fresh and marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/15896/1
BPAF	Bisphenols	0.52 µg/L	Marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/23236/1
BPC	Bisphenols	0.24 µg/L	Marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/24781/1
BPS	Bisphenols	27 µg/L	Marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/14986/1
BP-TMC	Bisphenols	0.5 µg/L	Marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/13022/1
Tris(2-butoxyethyl) phosphate	OPEs	24 µg/L	Freshwater	https://echa.europa.eu/registration-dossier/-/registered-dossier/14166/1
		2.4 µg/L	Marine water	
Galaxolide	Personal Care Ingredients	4.4 µg/L	Freshwater	https://echa.europa.eu/registration-dossier/-/registered-dossier/14504/1
Triclocarban	Personal Care Ingredients	0.094 µg/L	Freshwater	https://echa.europa.eu/registration-dossier/-/registered-dossier/12075/6/1
		0.0094 µg/L	Marine water	
Dibutyl phthalate	Phthalates	1.0 µg/L	Marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/14862/1
Diethyl phthalate	Phthalates	1.2 µg/L	Marine water	https://echa.europa.eu/registration-dossier/-/registered-dossier/14869/1

Appendix E: Stakeholder Guidance

The specific scope of this project was developed through extensive discussion with stakeholders representing various regulatory agencies, regulated stakeholders (e.g., wastewater and stormwater agency associations), non-governmental and advocacy organizations, and scientific institutes. All stakeholders were asked the same set of questions, provided below:

1. How would you recommend CECs be defined within the scope of the state's overall CEC monitoring strategy? How can a statewide CECs synthesis and the larger Water Boards CEC initiative best support or complement your mission?
2. What are your CECs data needs and priorities? This may include data gaps concerning specific CECs or classes of CECs; information needs on a specific matrix (e.g., sediment); minimum analytical methods information or data quality; specific types of data analysis; relevant risk thresholds or toxicological characteristics; and/or current plans and efforts in monitoring CECs and their effects, including an assessment of what level of effort and resources may be involved. You may rank your needs and priorities, if appropriate. We are also interested in guidance concerning types of CECs or matrices to exclude, particularly if they are being evaluated and managed through other efforts.
3. What are the CECs data sources you rely on and would consider valuable additions to a statewide CECs synthesis? This may include a synopsis of existing data and monitoring you have or have done, if any, including what matrices (e.g., surface water, sediment, biota), classes of CECs, analytical methods used, and any risk assessment or toxicological evaluation taken.
4. Are there specific management decisions over the next 3-5 years that this Water Boards initiative could or should inform?
5. What are potential challenges or concerns to note moving forward, including any takeaways from your experience with previous local, regional, or state efforts in the CECs arena?
6. Are you aware of multi-beneficial approaches that overlap the CEC initiative and climate-resilient water system portfolio management (http://waterresilience.ca.gov/)?
7. Would you like to maintain engagement with the Water Boards CEC initiative moving forward through an email listserv?
8. Are there additional stakeholders you would recommend we interview?

Provided below is a summary of important themes that informed the scope and implementation of the CEC Synthesis, as revealed by stakeholder input. A question-by-question synopsis of several stakeholder responses is provided in an ASC memo to the Water Boards.

Input on CEC Synthesis Scope and Implementation

Stakeholders expressed general agreement with a definition of CECs as synthetic or naturally occurring contaminants that are unregulated or inadequately regulated, not

commonly monitored in the environment, and have the potential to enter the environment and cause adverse ecological or human health impacts. There were differences in opinion as to what level of regulation would be sufficient for a contaminant to be excluded from the definition.

Some stakeholders specifically recommended review of CECs using a class-based approach, which provides flexibility to address shifts in manufacturing toward potentially regrettable substitutes, as well as the ability to characterize potential impacts by highlighting toxicological concerns common across classes of contaminants.
Priority classes of CECs mentioned by many stakeholders included PFAS, PBDEs, organophosphate ester flame retardants, and current-use urban pesticides. However, support for the inclusion of PFAS and current-use pesticides within the CEC Synthesis was not universal, with a few stakeholders suggesting that sufficient regulatory and monitoring activity is already underway for these classes.

Priority matrices or sample types of particular interest to several stakeholders included stormwater, as well as the tissues of sport fish and other higher trophic organisms like marine mammals. The matrix of recycled water was frequently mentioned, though one stakeholder suggested that the data may have limited usefulness because recycled water is extensively treated and contaminant levels may be below detection limits. Several stakeholders mentioned that policies designed to increase recycling of water will result in more discharges of reverse osmosis (RO) concentrate to the ocean. However, occurrence data for CECs in RO concentrate may be limited.

Priority data sources for CECs included CEDEN, reports generated by ASC, SCCWRP, SWAMP (the State Water Board's Surface Water Ambient Monitoring Program), and peer-reviewed literature. Other resources mentioned by stakeholders include data from DTSC (e.g., Safer Consumer Products program candidate chemical list), Biomonitoring California, US EPA databases (e.g., Chemistry Dashboard), USGS data (e.g., National Water-Quality Assessment [NAWQA] and Groundwater Ambient Monitoring and Assessment [GAMA]), and the European Chemicals Agency (ECHA; includes information on chemicals regulated under REACH), international websites/databases such as those from Health Canada, conference proceedings and presentations, and direct contacts with experts. Stakeholders also mentioned that reports from special studies conducted by regional water boards have provided useful information on CECs, as well as reports from Orange County on recycled water and the Santa Ana River; these reports are often not available in electronic form.

The tiered risk-based framework used to evaluate CEC occurrence data is an important element of this CEC Synthesis. Some stakeholders indicated that establishing the framework and the method for screening and prioritizing which CECs to monitor is more important than a static list of monitoring and management priorities, as the latter can become outdated quickly.
Finally, clear and consistent communication is needed as to the scope of the project, including what is outside the scope, as well as the results of the CEC Synthesis and

how they should be used. The report and associated communication will also need to clearly indicate the limitations of the available screening-level information.

Input on Coordination and Communication

Stakeholders indicated the need for transparency and extensive communication. This includes the need for significant coordination and communication within the Water Boards and among other agencies. Identifying high priority CECs for which urgent monitoring and management actions are recommended would be useful for partner agencies and could inform workload, staffing, and priorities. Coordination will allow for inter-agency collaboration, better utilization of available state tools, integration with existing efforts where possible, and will help avoid duplicative efforts. In particular, communication with partner agencies that can take management actions related to source control of CECs is important.

Stakeholders see the CEC Synthesis and larger CEC Program as a venue for CEC information sharing between regional and local programs, academia, and state and federal agencies. In particular, the CEC Program can help identify new CECs that should be monitored (which may require analytical method development and standardization), evaluated toxicologically, or regulated based on potential concerns.

The CEC Synthesis and larger CEC Initiative is expected to inform a number of activities, including:

- Monitoring and management of wastewater, including changes to treatment and emerging treatment technologies;
- Monitoring and management of municipal stormwater, including establishment of and compliance with new permits, as well as other local or regional decision-making;
- Monitoring and management of recycled water (direct and indirect potable reuse; coordination with California's Recycled Water Policy is essential) and associated waste products (e.g., RO concentrate), including public education regarding risks to humans and wildlife; and
- Use of nature-based projects, including wetlands and horizontal levees, which are sustained with wastewater effluent or stormwater runoff and provide sea level rise protection of coastal infrastructure.

Appropriate framing of the CEC Synthesis and CEC Initiative for the Water Boards, other agencies, dischargers, NGOs, and the public, is essential so that all stakeholders understand the goals and scope of the effort and can engage constructively. To that end, the State Water Board will be establishing a listserv for general communications. More digestible public-facing documents, such as fact sheets, may also be useful for this purpose.