

PCB Congeners by USEPA Method 1668A with HRGC/HRMS

Analysis for Polychlorinated Biphenyls (PCB) congeners shall be determined by USEPA Method 1668A or comparable method upon DEC EHL Project Manager approval. The cleanup techniques described in the method shall be employed as necessary to eliminate interferences and to obtain the lowest possible reporting limits. This should result in the minimum detection values listed, if not lower. Method 1668A requires a 5 point calibration range. If a PCB congener in a sample exceeds the calibration range the laboratory shall measure the undiluted extract and then dilute and re-analyze the extract to recover all the target compounds within the 5 point calibration range. Concentrations are in pg/g wet weight. RL is the minimum reporting limit.

Table 1: PCB Cogener and Mean Reporting Limit (RL) + Standard Deviation (SD)

PCB Congener	Mean RL+2SD	PCB Congener	Mean RL+2SD	PCB Congener	Mean RL+2SD
1	0.48	40+41+71	0.45	86+87+97+108+119+125	0.89
2	0.59	42	0.47	88+91	1
3	0.58	43	0.54	89	1.1
4	3.6	44+47+65	0.42	90+101+113	0.91
5	2.7	45+51	0.46	92	1.1
6	2.5	46	0.53	93+95+98+100+102	1
7	2.5	48	0.45	94	1.1
8	2.4	49+69	0.38	96	0.41
9	2.4	50+53	0.45	103	0.92
10	2.4	52	0.43	104	0.46
11	2.7	54	0.33	105	2
12+13	2.7	55	1.2	106	1.9
14	2.5	56	1.3	107 + 124	2
15	2.6	57	1.2	109	1.9
16	0.8	58	1.2	110 + 115	0.74
17	0.69	59+62+75	0.34	111	0.77
18+30	0.57	60	1.2	112	0.76
19	0.71	61+70+74+76	1.2	114	1.9
20+28	0.92	63	1.1	118	2.7
21+33	0.89	64	0.32	120	0.73
22	1	66	1.1	121	0.78
23	0.99	67	1	122	2.1
24	0.52	68	1.1	123	2
25	0.82	72	1.1	126	2.3
26+29	0.93	73	0.34	127	2
27	0.48	77	1.3	128+166	1.7
31	0.87	78	1.2	129+138+160+163	2
32	0.91	79	1	130	2.2
34	0.97	80	1.1	131	2.1
35	0.97	81	1.3	132	2.2
36	0.88	82	1.1	133	2
37	0.9	83+99	1	134+143	2.5
38	0.91	84	1.2	135+151+154	0.68
39	0.88	85+116+117	0.87	136	0.53

Table 1: PCB Congener and Mean Reporting Limit (RL) + Standard Deviation (SD)

PCB Congener	Mean RL+2SD	PCB Congener	Mean RL+2SD
137	2.1	184	1.1
139+140	1.9	186	1.2
141	1.9	187	1.3
142	2.1	188	1.2
144	0.71	189	2.2
145	0.56	190	1.1
146	1.8	191	1.1
147+149	2.2	192	1.3
148	0.71	194	0.57
150	0.55	195	0.63
152	0.52	196	0.68
153+168	1.8	197+200	0.52
155	0.48	198+199	0.71
156+157	2.2	201	0.53
158	1.4	202	0.66
159	1.5	203	0.65
161	1.4	204	0.53
162	1.5	205	0.48
164	1.5	206	1.1
165	1.7	207	0.82
167	1.6	208	0.78
169	2.7	209	0.68
170	1.5		
171+173	1.7		
172	1.6		
174	1.6		
175	1.5		
176	1.1		
177	1.6		
178	1.5		
179	1.2		
180+193	1.2		
181	1.6		
182	1.5		
183+185	1.5		

Table 2: PCB Co-elutions

PCB Co-elutions	
107 + 124	198 + 199
110 + 115	20 + 28
12 + 13	21 + 33
128 + 166	26 + 29
129 + 138 + 160 + 163	40 + 41 + 71
134 + 143	44 + 47 + 65
135 + 151 + 154	45 + 51
139 + 140	49 + 69
147 + 149	50 + 53
153 + 168	59 + 62 + 75
156 + 157	61 + 70 + 74 + 76
156L + 157L	83 + 99
171 + 173	85 + 116 + 117
18 + 30	86 + 87 + 97 + 108 + 119 + 125
180 + 193	88 + 91
183 + 185	90 + 101 + 113
197 + 200	93 + 95 + 98 + 100 + 102

Polybrominated Diphenyl Ethers by USEPA Method 1614

PBDEs shall be determined by USEPA Method 1614, "Brominated Diphenyl Ethers in Water Soil Sediment and Tissue by HRGC/HRMS" or a comparable method upon DEC EHL Project Manager approval. The data quality objectives of the project require that PBDE data be free of interference from other chlorinated and brominated substances. Sufficient cleanup during extraction shall be performed to remove these interfering substances prior to final analysis of the extracts.

Table 3: PBDE Congener and Mean Reporting Limit (RL) + Standard Deviation (SD)

PBDE Congener	Mean RL+2SD	PBDE Congener	Mean RL+2SD
7	0.66	85	2.1
8	0.51	99	2.8
10	0.73	100	2.4
12	0.44	105	2.6
13	0.45	116	3.7
15	0.38	119	2.2
17	2.6	126	1.8
25	2	128	3.8
28	2.3	138	1.4
30	2.8	140	0.85
32	2.3	153	0.98
35	8.2	154	0.56
37	1.8	155	0.61
47	0.39	181	0.76
49	0.46	183	0.42
51	0.3	190	1.3
66	0.57	203	1.1
71	0.47	206	2.7
75	0.44	207	3.2
77	0.39	208	3.5

Concentrations are in pg/g wet weight
RL is the minimum reporting limit

Table 4: PBDE Co-elutions

PBDE Co-elutions
119 + 120
12 + 13
138 + 166
17 + 25
28 + 33
8 + 11

Organochlorine Pesticides by USEPA Method 8081

Organochlorine pesticides shall be determined by USEPA Method 8081, "Organochlorine Pesticides by Gas Chromatography" or a comparable method upon DEC EHL Project Manager approval. The data quality objectives of the project require that the organochlorine pesticide data be free of interference from other chlorinated and brominated substances. Sample cleanup during extraction shall be performed to remove these interfering substances prior to final analysis of the extracts.

Table 5: Pesticides and Mean Reporting Limit (RL) + 2 Standard Deviations (SD)

Pesticide	Mean RL+2SD
Aldrin	0.17
Chlordane, cis-	0.067
Chlordane, oxy-	1.1
Chlordane, trans-	0.058
DDD, 2,4'-	0.12
DDD, 4,4'-	0.22
DDE, 2,4'-	0.16
DDE, 4,4'-	0.21
DDT, 2,4'-	0.2
DDT, 4,4'-	0.22
Dieldrin	0.14
Endosulfan Sulfate	0.17
Endosulfan, alpha-	0.11
Endosulfan, beta-	0.14
Endrin	0.18
Endrin Ketone	0.15
HCH, alpha	0.2
HCH, beta	0.38
HCH, delta	0.28
HCH, gamma	0.27
Heptachlor	0.27
Heptachlor Epoxide	0.2
Hexachlorobenzene	0.059
Methoxychlor	0.39
Mirex	0.12
Nonachlor, cis-	0.15
Nonachlor, trans-	0.14
Total Toxaphene	60

Concentrations are in nanogram/gram (ng/g) wet weight

RL: Reporting Limit is the minimum reporting limit

Perfluorinated Compounds

Perfluorinated Compounds (PFCs) shall be analyzed by a method chosen by the contract lab upon DEC EHL Project Manager approval. The method shall be described, with Proof of Validation. Cleanup techniques shall be employed to eliminate interferences and to obtain the lowest possible reporting limits. This should result in the minimum detection values listed, if not lower.

Table 6: Perfluorinated Compounds and Mean Reporting Limit (RL) + 2 Standard Deviations (SD)

Perfluorinated Compounds	Mean RL + 2SD
PFBA	2.6
PFBS	5.1
PFDA	2.6
PFD ₀ A	2.6
PFHpA	2.6
PFHxA	2.6
PFHxS	5.1
PFNA	2.6
PFOA	2.6
PFOS	5.1
PFOSA	2.6
PFPeA	2.6
PFUnA	2.6

RL: Reporting Limit

Reporting Limit calculated as the current average reporting limit plus 2 standard deviations
Concentrations in pictogram/gram (pg/g) wet weight.

Pharmaceuticals and Personal Care Products by USEPA Method 1694

Pharmaceuticals and Personal Care Products (PPCP) shall be determined by EPA Method 1694 or a comparable method upon DEC EHL Project Manager approval. Any modifications shall be clarified with Proof of Validation. The cleanup techniques described in the method shall be employed to eliminate interferences and to obtain the lowest possible reporting limits. This should result in the minimum detection values listed, if not lower.

Table 7: Pharmaceuticals and Personal Care Products and Mean Reporting Limit + 2 Standard Deviations (SD)

Product	Mean RL + 2SD	Product	Mean RL + 2SD	Product	Mean RL + 2SD
1,7-Dimethylxanthine	69	Desmethyldiltiazem	0.17	Oxolinic Acid	1.2
10-Hydroxy-amitriptyline	0.17	Diazepam	2.3	Oxycodone	1.6
2-Hydroxy-ibuprofen	110	Digoxigenin	220	Oxytetracycline	6.6
4-Epianhydrochlortetracycline	73	Digoxin	11	Paroxetine	4.9
4-Epianhydrotetracycline	37	Diltiazem	0.48	Penicillin G	3.5
4-Epichlortetracycline	18	Diphenhydramine	0.7	Penicillin V	4.1
4-Epioxytetracycline	7.7	Doxycycline	7.3	Prednisolone	7.8
4-Epitetracycline	8.3	Enalapril	0.7	Prednisone	110
Acetaminophen	17	Enrofloxacin	3.5	Promethazine	0.5
Albuterol	1.5	Erythromycin-H2O	0.35	Propoxyphene	0.39
Alorazolam	0.35	Flumequine	1.9	Propranolol	2.6
Amitriptyline	0.44	Fluocinonide	7.1	Ranitidine	1.9
Amlodipine	3.8	Fluoxetine	1.7	Roxithromycin	0.35
Amphetamine	19	Fluticasone propionate	4	Sarafloxacin	17
Anhydrochlortetracycline	36	Furosemide	52	Sertraline	0.46
Anhydrotetracycline	30	Gemfibrozil	2.2	Simvastatin	26
Atenolol	2.7	Glipizide	7.8	Sulfachloropyridazine	1.7
Atorvastatin	3.7	Glyburide	3.9	Sulfadiazine	1.7
Azithromycin	5.4	Hydrochlorothiazide	26	Sulfadimethoxine	0.6
Benzoyllecgonine	0.36	Hydrocodone	3.8	Sulfamerazine	1.5
Benztropine	0.39	Hydrocortisone	71	Sulfamethazine	2.9
Betamethasone	7.6	Ibuprofen	20	Sulfamethizole	1.3
Bisphenol A	650	Isochlortetracycline	7.5	Sulfamethoxazole	1.8
Caffeine	17	Lincomycin	3.5	Sulfanilamide	17
Carbadox	1.7	Lomefloxacin	3.5	Sulfathiazole	1.7
Carbamazepine	1.7	Meprobamate	5	Tetracycline	7.6
Cefotaxime	10	Metformin	7.4	Theophylline	64
Chlortetracycline	7.1	Methylprednisolone	12	Thiabendazole	1.7
Cimetidine	1.5	Metoprolol	2.7	Trenbolone	5.2
Ciprofloxacin	10	Miconazole	1.7	Trenbolone acetate	0.4
Clarithromycin	1.7	Minocycline	230	Triamterene	1.1
Clinafloxacin	19	Naproxen	3.9	Triclocarban	8.2
Clonidine	4.5	Norfloxacin	31	Triclosan	200
Cloxacillin	3.9	Norfluoxetine	2.7	Trimethoprim	1.7
Cocaine	0.24	Norgestimate	17	Tylosin	6.9
Codeine	9.4	Norverapamil	0.17	Valsartan	5.2
Cotinine	3.7	Ofloxacin	1.8	Verapamil	0.17
DEET	0.45	Ormetoprim	0.7	Virginiamycin	15
Dehydronifedipine	0.7	Oxacillin	4.1	Warfarin	2
Demeclocycline	19				

RL: Reporting Limit

Reporting Limit calculated as the current average reporting limit plus 2 standard deviations Concentrations in nanograms per gram (ng/g) wet weight