Hylebos Waterway Fish Injury Studies
Individual Data and Quality Assurance Results
CASE NARRATIVES

Reproductive Toxicology in Flatfish

Semivolatile Organics (Tables 1, 2)

Calibrations

The calibration data used to quantitate the analytes met the initial (Tables 1J, 2G) and continuing (Tables 1K, 1L and 2H) calibration criteria detailed in the "Commencement Bay Quality Assurance Plan, 12/95" (QAP).

Method Blank Analysis

Method blanks were analyzed for CHs (Tables 1E, IF) and AHs (Table 2D). The criteria in the QAP for method blanks were met (no more than 4 analytes to exceed 3 X the MDLs listed in Tables 1M, 2I).

Surrogate Recoveries

Surrogate recoveries for samples analyzed by GC/MS for AHs and by GC/ECD for PCBs, DDTs and pesticides (Tables 1A, 1D, 2A, and 2C) were within the guidelines detailed in the QA Plan (50-125% recovery).

SRM Analyses

An aliquot of NIST tissue SRM 1974a was analyzed with each of the sample sets, and the results (Tables 1E, 1F, and 2D) met the criteria in the QA plan (>70% of concentrations for the certified analytes that were present in NIST SRM 1974a in concentrations greater than 10 times the MDL were within 35% of either end of the NIST values. Noncertified values for the other analytes in the SRM and concentrations from samples of the SRM analyzed previously are also shown in the tables.

Sample Duplicates

One sample was analyzed in duplicate (Tables I H, 11, and 2F) and the criteria in the QAP were met (QA plan, Table 6.2).

Reanalyses

There is no plan to reanalyze any samples.

GUMS Confiymations

Two samples (Table 1N, 1O) were analyzed using GC/MS to confirm thepresence of the pesticides and PCBs determined previously by GC/ECD.

Hylebos Reproductive Toxicology in Flatfish Study.

Analyses for Chlorinated Hydrocarbons
Table 1 Notes

The concentrations of analytes were calculated using 4,4'dibromooctafluorobiphenyl as the surrogate standard.

The “less than” symbol (<) indicates that the analyte was not detected in concentrations above the stated value.

Results were determined by gas chromatography with electron capture detection (GC/ECD).

Concentrations less than 10 ng/g are rounded to two significant figures; concentrations greater than or equal to 10 ng/g are rounded to three significant figures.

The percent recoveries of the surrogate standard were calculated using tetrachloro-o-xylene to correct for the fraction of the total extract used for the HPLC cleanup step.

The concentration reported for “Total PCBs” is the sum of the 17 PCB congeners multiplied by 2 (as defined in the QA Plan).

Set # and Sample # designations are intended for internal lab use and identification only. Jar # and site name represent Hylebos Damage Assessment official sample identification designations.

The sample weights used to calculate concentrations for the method blank are the mean sample weights calculated for the field samples in the same set.

Table 1A-p1: Sample information for flatfish stomach contents analyzed for chlorinated hydrocarbons as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Set #	Sample#	Sample Type	Species	Jar #*	Site	Collection Date	Sample Wt. (g)	DOB Rec. (%)
H308	110-461	Tissue - stomach contents	English sole	94.3515,3516,3543	COLVOS PASSAGE	12/2/94	1.07	83
H308	110-462	Tissue - stomach contents	English sole	94.3529,3537	COLVOS PASSAGE	12/2/94	0.95	87
H308	110-463	Tissue - stomach contents	English sole	94.3530,3531	COLVOS PASSAGE	12/2/94	1.19	89
H308	110-464	Tissue - stomach contents	English sole	94.3546,3550,3565	HYLEBOS WATERWAY	12/5/94	1.90	89
H308	110-465	Tissue - stomach contents	English sole	94.3575,3576,3577	HYLEBOS WATERWAY	12/5/94	3.01	79
H309	110-375	Tissue - stomach contents	English sole	94.3589, 3592, 3588	HYLEBOS WATERWAY	12/6/94	2.94	102
H309	110-376	Tissue - stomach contents	English sole	94.3594A, 3595, 3602	HYLEBOS WATERWAY	1/4/95	2.90	101
H309	110-377	Tissue - stomach contents	English sole	94.3603, 3629, 3630	HYLEBOS WATERWAY	1/4/95	2.51	105
H309	110-379	Tissue - stomach contents	English sole	94.3603, 3629, 3630	HYLEBOS WATERWAY	1/4/95	2.13	102
H309	110-378	Tissue - stomach contents	English sole	94.3634, 3645, 3647, 3649	HYLEBOS WATERWAY	1/4/95	2.50	101
H309	110-380	Tissue - stomach contents	English sole	94.3651/3652, 3654/3656	COLVOS PASSAGE	1/6/95	3.04	103
H309	110-381	Tissue - stomach contents	English sole	94.3657, 3658	COLVOS PASSAGE	1/6/95	2.55	98
H309	110-382	Tissue - stomach contents	English sole	94.3659, 3662, 3669/3671, 3682, 3684	COLVOS PASSAGE	12/6/94	2.89	101

DOB = dibromooctafluorobiphenyl

*Jar #s represent official Hylebos Damage Assessment sampling numbers. If more than one jar # is given, the sample analyzed was a composite of those jars.

Table 1B-p1: Concentrations (ng/g, wet weight) of pesticides in flatfish stomach contents samples analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample#	HCBD	HCB	LIND	HEPT	Aldrin	α + γ Chlordane	Dieldrin	p,p'-DDE	p,p'-DDD	p,p'-DDT
110-461	0.45	0.13	<0.19	<0.25	<0.16	<0.31	<0.17	0.33	0.45	<0.3
110-462	0.49	<0.12	<0.18	<0.24	<0.16	<0.3	<0.17	0.22	0.38	<0.29
110-463	0.51	<0.12	<0.18	<0.24	0.16	<0.29	<0.16	0.34	0.27	<0.28
110-464	9.6	8.7	0.69	0.33	<0.21	1.1	0.59	2.3	4.5	8
110-465	0.96	7.1	3	<0.13	<0.087	1.6	3.3	30.4	116	90.4
110-375	2.3	5.2	<0.14	<0.13	<0.081	1	0.27	1.3	3.1	5.3
110-376	11.2	20.2	<0.15	<0.14	<0.089	1.8	0.84	1.5	3.8	8.4
110-377	27.9	20.7	<0.19	<0.18	<0.11	1.2	0.23	2.1	4.6	10.9
110-379	22.1	20.3	<0.2	<0.19	<0.12	1.5	0.21	1.9	4.8	6.8
110-378	3.1	7.1	<0.21	<0.2	<0.13	1.8	0.34	2	4.7	6.6
110-380	<0.064	0.12	<0.14	<0.14	<0.086	0.23	<0.09	0.18	<0.17	<0.16
110-381	<0.15	<0.15	<0.33	<0.31	<0.2	<0.39	<0.21	0.28	<0.39	<0.38
110-382	0.098	0.11	<0.16	<0.15	<0.096	<0.19	0.16	0.21	<0.19	<0.18

HCBD = hexachlorobutadiene; HCB = hexachlorobenzene; LIND = lindane; HEPT = heptachlor.

Table 1C-p1: **Concentrations (ng/g, wet weight) of chlorobiphenyl congeners (chlorination level/IUPAC number) in flatfish stomach contents samples analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.**

Sample#	3/18	3/28	4/44	4/52	4/66	5/101	5/105	5/118	6/128	6/138	6/153	7/170	7/180	7/187	8/195	9/206	10/209	Total PCBs*
110-461	0.71	1.1	1.8	0.57	0.91	1	0.28	1	0.21	1.7	1.8	0.52	0.25	0.63	<0.11	0.12	<0.13	25
110-462	0.8	0.96	2	0.75	0.67	1.1	0.25	1.2	0.2	1.8	2.2	0.24	0.28	0.65	<0.11	0.18	0.21	27
110-463	0.76	1.1	1.9	0.75	0.69	1.1	0.34	1.1	0.18	1.5	1.8	0.38	0.25	0.56	<0.11	0.11	0.18	25
110-464	6.8	1.2	6.3	8.4	1.7	13.6	2.6	9.4	2.3	11.9	18	2.7	1.9	5.1	0.68	4.7	4.6	200
110-465	6.8	6.7	36.2	110	35.2	286	59.2	190	14.4	100	111	9.2	3.2	6.6	0.35	2.6	1.9	2000
110-375	<0.28	0.66	2.5	4.1	1	9.1	1.4	6.2	1.6	9.3	12.4	1.9	1.2	3.7	0.39	2.4	2.5	120
110-376	<0.31	1.6	3.2	7.2	1.2	10.1	2.3	9.2	2	10.7	13.6	2.6	1.7	3.1	0.65	5	6.1	160
110-377	0.9	1.2	3.1	5.8	1.2	10.8	2	7.4	1.8	10.6	14.5	1.9	1.4	4.7	0.48	3.8	3.9	150
110-379	1.4	1.4	3	4.5	0.94	9.2	1.6	6.6	1.4	10.1	13.5	1.9	1.3	3.6	0.39	1.9	4.3	130
110-378	1.7	1.3	2.7	4.4	0.88	9.6	1.7	6.4	1.8	10	13.7	1.9	1.4	4.1	0.31	1.9	2	130
110-380	<0.29	0.62	1.2	0.35	<0.12	0.79	0.16	0.68	0.23	1.7	2.1	0.32	0.2	0.79	0.054	0.16	0.23	19
110-381	<0.68	0.47	1.5	<0.45	<0.28	0.82	0.21	0.75	0.18	1.8	1.7	0.56	0.27	0.56	<0.12	<0.11	<0.14	18
110-382	<0.33	0.37	1.2	0.39	<0.14	0.61	0.26	0.63	0.14	1.2	1.4	0.32	0.23	0.42	<0.058	0.083	0.076	15

* The concentration reported for "Total PCBs" is the sum of the 17 PCB congeners multiplied by 2 (as defined in the QA Plan).

Table 1D-p1: Quality assurance sample information in method blanks and standard reference material (SRM 1974a) analyzed for chlorinated hydrocarbons as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Set #	Sample #	Sample Type	Sample Wt (g)	DOB Rec (%)
Method Blank				
H308	110-467	Method Blank	2.04	65
H309	110-384	Method Blank	2.68	100
SRM 1974a				
H308	110-466	SRM 1974a	3.01	74
H309	110-383	SRM 1974a	2.95	104

DOB = dibromooctafluorobiphenyl

Table 1E-p1: QA: Concentrations (ng/g, wet weight) of pesticides in method blanks and standard reference material (SRM 1974a) analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	Sample Type	HCBD	HCB	Lindane	HEPT	Aldrin	α + γ Chlordane	Dieldrin	p,p'-DDE	p,p'-DDD	p,p'-DDT
Method Blank											
110-467	Method Blank	0.17	< 0.072	< 0.11	< 0.14	< 0.094	< 0.18	< 0.1	< 0.088	< 0.16	< 0.17
110-384	Method Blank	< 0.073	< 0.073	< 0.16	< 0.15	< 0.097	< 0.19	< 0.1	< 0.089	< 0.19	< 0.18
	Average*	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Deviation	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Relative	Standard Deviation	100.0%	?	?	?	?	?	?	?	?	?
SRM 1974a											
110-466	SRM 1974a	0.15	< 0.091	< 0.14	< 0.18	< 0.12	3.9	0.74	4.2	6.3	0.27
110-383	SRM 1974a	< 0.062	< 0.062	< 0.14	< 0.13	< 0.082	3.5	0.86	3.6	6.4	0.34
	Average*	0.08	0.00	0.00	0.00	0.00	3.73	0.80	3.90	6.35	0.31
	Standard Deviation	0.08	0.00	0.00	0.00	0.00	0.21	0.06	0.27	0.00	0.03
Relative	Standard Deviation	100.0%	?	?	?	?	5.7%	7.9%	6.9%	0.0%	11.1%
SRM 1974a Certified concentrations (ng/g, wet wt)	$\bar{x}$	---	---	---	---	---	---	0.7'	5.84	4.90	0.45
	95% CI								0.63	0.72	0.07
	UCL								6.73	7.59	0.69
	LCL								3.39	2.72	0.25
SRM 1974a Previously analyzed concentrations (ng/g, wet wt, n=10)	$\bar{x}$	nd	nd	nd	nd	nd	2.86‡	0.88‡	3.9	6.0	0.35
	S.D.	---	---	---	---	---	0.15	0.29	0.7	0.7	0.07

HCBD = hexachlorobutadiene; HCB = hexachlorobenzene; HEPT = heptachlor.

$\bar{x}$ = the average concentration (ng/g, wet wt); 95% CI = the 95% confidence interval; UCL = the upper confidence limit (95% confidence limit + 35%); LCL = the lower confidence limit (95% confidence limit - 35%).

n = the number of values being averaged; S.D.= the standard deviation; nd = not detected in previous samples, or detected at levels below the limit of detection.

'Dieldrin is given as a noncertified value.

‡ Indicates that $n<10$ because the analyte was either not detected or not analyzed for in some samples.

* When an analyte was detected in some, but not all of the method blanks or SRMs, the average concentration is based on the concentration when detected and zero when not detected. When an analyte was not detected in any of the method blanks or SRMs, zero is reported for the average and the SD and a "?" is reported for the RSD.

Table 1F-p1: QA: Concentrations (ng/g, wet weight) of chlorobiphenyl congeners (chlorination level/IUPAC number) in method blanks and standard reference material (SRM 1974a) analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	3/18	3/28	4/44	4/52	4/66	5/101	5/105	5/118	6/128	6/138	6/153	7/170	7/180	7/187	8/195	9/206	10/209	Total PCBs**
Method Blank																		
110-467	< 0.29	0.94	0.92	0.23	< 0.13	0.28	0.11	0.31	< 0.072	0.46	0.37	< 0.065	< 0.075	< 0.095	< 0.065	< 0.066	< 0.078	7.3
110-384	< 0.33	0.36	1.2	0.23	0.47	0.26	0.11	0.32	< 0.075	0.42	0.21	< 0.063	< 0.072	< 0.097	< 0.059	< 0.055	< 0.068	7.2
Average*	0.00	0.65	1.06	0.23	0.23	0.27	0.11	0.32	0.00	0.44	0.29	0.00	0.00	0.00	0.00	0.00	0.00	7.22
Standard Deviation	0.00	0.29	0.14	0.00	0.23	0.01	0.00	0.01	0.00	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Relative Stand. Dev.	?	44.3%	13.2%	1.0%	100.0%	3.1%	0.3%	1.9%	?	4.9%	27.6%	?	?	?	?	?	?	0.7%
SRM 1974a																		
110-466	4	6.4	10.1	14.2	8.1	16.6	5.1	15.1	2.5	16.5	16	0.65	1.1	4.5	< 0.082	0.15	0.31	240
110-383	3.6	6.1	9.9	14.2	14.7	17.2	5.2	15.7	2.4	16.5	15.8	0.66	1	4.1	0.08	0.27	0.087	260
Average*	3.80	6.26	10.00	14.23	11.39	16.89	5.14	15.44	2.43	16.51	15.92	0.66	1.04	4.33	0.04	0.21	0.20	248.95
Standard Deviation	0.22	0.17	0.13	0.01	3.31	0.27	0.04	0.30	0.05	0.02	0.08	0.01	0.03	0.20	0.04	0.06	0.11	6.13
Relative Stand. Dev.	5.8%	2.7%	1.3%	0.1%	29.1%	1.6%	0.9%	1.9%	2.0%	0.1%	0.5%	0.8%	2.6%	4.6%	100.0%	27.3%	56.5%	2.5%
SRM 1974a $\bar{x}$	3.7'	9'	9.28	13.1	11.54	14.6	6.04	14.9	2.5	15.2	16.54	0.69	1.96	3.87	--	--	--	
Certified 95% CI			0.84	1.30	0.50	1.10	0.39	0.40	0.39	1.10	0.06	0.12	0.43	0.27				
concentrations UCL			12.31	19.44	16.25	21.2	8.68	20.7	3.90	22.0	23.5	1.01	3.21	5.59				
(ng/g, wet wt) LCL			4.84	7.76	7.18	8.78	3.67	9.43	1.37	9.17	10.2	0.33	0.99	2.34				
SRM 1974a $\bar{x}$	3.7	9.0	9.5	13.5	13.0	16.0	5.1	15.3	2.4	16.1	20.3	0.68	1.5	4.1	0.08	0.12‡	0.12‡	
Previously S.D.	0.6	1.3	1.4	1.7	2.0	2.4	1.0	2.0	0.4	2.1	2.5	0.17	0.9	0.7	0.04	0.06	0.04	
Analyzed conc (ng/g, wet wt, n=10)																		

$\bar{x}$ = the average concentration (ng/g, wet wt); 95% CI = the 95% confidence interval; UCL = the upper confidence limit (95% confidence limit + 35%); LCL = the lower confidence limit (95% confidence limit - 35%).

n = the number of values being averaged; S.D.= the standard deviation; nd = not detected in previous samples, or detected at levels below the limit of detection.

'PCBs 3/18 and 3/28 are given as a noncertified values.

‡ Indicates that n<10 because the analyte was either not detected or not analyzed for in some samples.

* When an analyte was detected in some, but not all of the method blanks or SRMs, the average concentration is based on the concentration when detected and zero when not detected. When an analyte was not detected in any of the method blanks or SRMs, zero is reported for the average and the SD and a "?" is reported for the RSD.

**The concentration reported for "Total PCBs" is the sum of the 17 PCB congeners multiplied by 2 (as defined in the QA Plan).

Table 1G-p1: QA: Sample information for flatfish tissue analyzed in replicate for chlorinated hydrocarbons as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Set #	Sample#	Sample Type	Species	Jar #	Site	Date Collected	Sample Wt. (g)	DOB Rec. (%)
H309	110-377	Tissue - stomach contents	English sole	94.3603, 3629, 3630	HYLEBOS WATERWAY	1/4/95	2.51	105
H309	110-379	Tissue - stomach contents	English sole	94.3603, 3629, 3630	HYLEBOS WATERWAY	1/4/95	2.13	102

DOB = dibromooctafluorobiphenyl

Replicate sample analyses are identified by jar #.

*Jar #s represent official Hylebos Damage Assessment sampling numbers. If more than one jar # is given, the sample analyzed was a composite of those jars.

Table 1H-p1: QA: Concentrations (ng/g, wet weight) of pesticides in flatfish tissue analyzed in replicate as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	HCBD	HCB	Lindane	HEPT	Aldrin	α + γ Chlordane	Dieldrin	p,p'-DDE	p,p'-DDD	p,p'-DDT
Tissue - stomach contents										
110-377	27.9	20.7	< 0.19	< 0.18	< 0.11	1.2	0.23	2.1	4.6	10.9
110-379	22.1	20.3	< 0.2	< 0.19	< 0.12	1.5	0.21	1.9	4.8	6.8
Average*	25.00	20.52	0.00	0.00	0.00	1.36	0.22	2.00	4.71	8.85
Standard Deviation	2.91	0.20	0.00	0.00	0.00	0.11	0.01	0.12	0.08	2.02
Relative Standard Deviation	11.6%	1.0%	?	?	?	8.3%	4.9%	6.0%	1.7%	22.9%

HCBD = hexachlorobutadiene; HCB = hexachlorobenzene; HEPT = heptachlor.

Replicate sample analyses are identified by jar #.

* When an analyte was detected in some, but not all of the replicates, the average concentration is based on the concentration when detected and zero when not detected. When an analyte was not detected in any of the replicates, zero is reported for the average and the SD and a "?" is reported for the RSD.

Table 1l-p1: QA: Concentrations (ng/g, wet weight) of chlorobiphenyl congeners (chlorination level/IUPAC number) in flatfish tissue analyzed in replicate as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	3/18	3/28	4/44	4/52	4/66	5/101	5/105	5/118	6/128	6/138	6/153	7/170	7/180	7/187	8/195	9/206	10/209	Total PCBs**
Tissue - stomach contents																		
110-377	0.9	1.2	3.1	5.8	1.2	10.8	2	7.4	1.8	10.6	14.5	1.9	1.4	4.7	0.48	3.8	3.9	150
110-379	1.4	1.4	3	4.5	0.94	9.2	1.6	6.6	1.4	10.1	13.5	1.9	1.3	3.6	0.39	1.9	4.3	130
Average*	1.15	1.29	3.03	5.15	1.09	9.99	1.79	7.00	1.63	10.33	14.02	1.89	1.39	4.16	0.44	2.85	4.08	142.53
Standard Deviation	0.25	0.06	0.07	0.66	0.15	0.83	0.21	0.41	0.21	0.28	0.49	0.02	0.05	0.52	0.04	0.96	0.19	8.72
Relative Stand. Dev.	21.4%	4.5%	2.4%	12.8%	13.7%	8.3%	11.5%	5.9%	13.0%	2.7%	3.5%	1.1%	3.4%	12.5%	9.7%	33.7%	4.8%	6.1%

* When an analyte was detected in some, but not all of the replicates, the average concentration is based on the concentration when detected and zero when not detected. When an analyte was not detected in any of the replicates, zero is reported for the average and the SD and a "?" is reported for the RSD.

**The concentration reported for "Total PCBs" is the sum of the 17 PCB congeners multiplied by 2 (as defined in the QA Plan).

Table 1J-p1: Standard curve correlation (r) from the linear regression of the concentration of the analyte to the area response for the multilevel standards.

Analyte	H308[a] r	H309[b] r
hexachlorobenzene	0.9998	0.9995
lindane	0.9999	0.9998
3\18	0.9997	0.9999
3\28	1.0000	1.0000
heptachlor	0.9992	0.9998
4\52	0.9998	1.0000
aldrin	0.9998	0.9998
4\44	0.9998	0.9999
4\66	1.0000	1.0000
gamma-chlordane	1.0000	1.0000
5\101	0.9999	1.0000
alpha-chlordane	1.0000	1.0000
dieldrin	0.9998	0.9999
p,p'-DDE	0.9999	0.9999
5\118	1.0000	1.0000
p,p'-DDD	0.9998	0.9999
6\153	0.9999	1.0000
5\105	1.0000	0.9999
p,p'-DDT	0.9996	1.0000
6\138	1.0000	1.0000
7\187	1.0000	1.0000
6\128	1.0000	0.9999
7\180	1.0000	1.0000
7\170	1.0000	0.9999
8\195	1.0000	0.9999
9\206	1.0000	0.9999
10\209	1.0000	0.9999

[a]Based on six concentration levels of standards.
[b]Based on eight concentration levels of standards (except HCB, which is based on seven levels).

Table 1K-p1: Continuing calibration verification data* for chlorinated pesticides in standards run before, during and after the samples in a flatfish tissue set analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

ML Name	HCB	LIND	HEPT	Aldrin	α-CHLOR	γ-CHLOR	Dieldrin	p,p'-DDE	p,p'-DDD	p,p'-DDT
H308										
H308CH5E1-A	112	119	116	122	119	119	121	122	121	117
H308CH5E1-B	92	91	83	98	95	95	90	99	92	86
H308CH5E1-C	95	102	96	104	102	102	103	104	102	97
Average	100	104	98	108	105	105	105	108	105	100
SD	9.1	11.5	13.4	10.3	10.0	10.1	12.7	9.8	11.9	13.1
RSD	9.1%	11.1%	13.6%	9.5%	9.5%	9.6%	12.1%	9.0%	11.3%	13.1%
H309										
H309CH5E1A	87	94	92	98	95	95	96	97	95	93
H309CH5E1B	90	102	97	99	97	97	98	99	98	95
H309CH5E1C	88	91	92	94	94	94	93	95	92	91
Average	88	96	94	97	95	95	96	97	95	93
SD	1.4	4.5	2.5	2.0	1.4	1.4	2.0	1.4	2.4	1.6
RSD	1.6%	4.7%	2.6%	2.1%	1.5%	1.5%	2.1%	1.5%	2.5%	1.6%

HCB = hexachlorobenzene; LIND = lindane; HEPT = heptachlor; CHLOR = chlordane

*Data are reported as percent recovery calculated using the multilevel curve analyzed with each set.

Table 1L-p1: Continuing calibration verification data* for chlorobiphenyl congeners (chlorination level/IUPAC number) in standards run before, during and after the samples in a flatfish tissue set analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

ML Name	3/18	3/28	4/44	4/52	4/66	5/101	5/105	5/118	6/128	6/138	6/153	7/170	7/180	7/187	8/195	9/206	10/209
H308																	
H308CH5E1-A	115	117	116	116	117	116	119	118	119	118	116	119	119	117	119	119	118
H308CH5E1-B	94	96	94	95	95	95	94	95	96	95	97	96	96	95	96	95	95
H308CH5E1-C	98	99	98	96	98	97	100	98	99	98	98	99	99	97	99	99	98
Average	102	104	103	102	104	103	104	104	104	104	104	104	105	103	105	104	104
SD	9.5	9.6	9.4	9.5	9.7	9.8	10.7	10.0	10.1	10.0	8.9	10.4	10.0	10.0	10.3	10.5	10.4
RSD	9.4%	9.2%	9.1%	9.3%	9.3%	9.5%	10.3%	9.7%	9.7%	9.6%	8.6%	10.0%	9.6%	9.7%	9.9%	10.1%	10.1%
H309																	
H309CH5E1A	93	94	93	93	94	94	96	95	95	94	94	95	95	94	96	96	95
H309CH5E1B	95	96	96	96	96	96	97	97	97	96	97	96	96	96	96	96	96
H309CH5E1C	94	94	94	94	94	94	93	94	94	94	96	95	95	95	95	95	95
Average	94	95	94	94	95	95	95	95	95	95	95	96	95	95	96	96	96
SD	0.9	1.3	1.2	1.1	1.3	1.1	1.6	1.2	0.9	0.8	1.2	0.7	0.7	0.6	0.5	0.5	0.4
RSD	1.0%	1.4%	1.3%	1.2%	1.3%	1.1%	1.7%	1.2%	0.9%	0.9%	1.2%	0.7%	0.8%	0.6%	0.6%	0.6%	0.4%

*Data are reported as percent recovery calculated using the multilevel curve analyzed with each set.

Table 1M-p1: Concentrations of analytes in 7 replicates of spiked clean matrix and calculated method detection limits (MDL, ng/g, wet weight) for pesticides, DDTs and chlorobiphenyl congeners. MDLs were calculated by the method in appendix B of 40CFR part 136 (sample set H288, 3/95).

Sample#	HCB	LIND	HEPT	Aldrin	alpha chlordan	gamma chlordan	Dieldrin	p,p'-DDD	p,p'-DDE	p,p'-DDT	3\18	3\28	4\44	4\52
110-288	6.7	6.5	7.3	5.8	6.5	0.2	6.5	6.9	7.3	7.4	6.7	6.7	7.1	6.9
110-289	6.6	6.2	7.1	5.4	6.2	0.1	6.1	6.4	7.0	7.2	6.7	6.5	7.1	7.0
110-290	6.4	6.2	7.2	5.5	6.3	0.1	6.2	6.5	7.1	7.4	6.4	6.5	7.0	6.8
110-291	6.5	6.4	7.4	5.7	6.4	0.1	6.4	6.8	7.3	7.6	6.1	6.8	7.1	6.9
110-292	6.6	6.8	7.7	5.9	6.5	0.2	6.6	7.8	7.5	7.7	6.1	6.7	7.2	6.8
110-293	6.3	6.6	7.5	5.4	6.3	0.2	6.3	6.8	7.2	7.4	6.4	6.4	7.1	6.8
110-294	6.5	6.4	7.4	5.5	6.4	0.1	6.3	6.7	7.2	7.8	6.6	6.5	7.1	6.9
Average	6.5	6.4	7.4	5.6	6.4	0.2	6.4	6.8	7.2	7.5	6.4	6.6	7.1	6.9
Std Dev	0.13	0.22	0.19	0.21	0.13	0.02	0.18	0.45	0.17	0.22	0.25	0.15	0.05	0.07
MDL	0.41	0.68	0.58	0.65	0.41	0.06	0.57	1.41	0.54	0.70	0.78	0.46	0.16	0.21
3XMDL	1.22	2.03	1.75	1.95	1.24	0.18	1.70	4.23	1.63	2.11	2.34	1.38	0.48	0.63

Sample#	4\66	5\101	5\105	5\118	6\128	6\138	6\153	7\170	7\180	7\187	8\195	9\206	10\209
110-288	6.8	6.7	6.2	5.6	6.3	6.9	6.9	6.4	6.3	6.4	6.1	6.2	6.3
110-289	6.7	6.7	5.8	5.4	6.1	6.8	6.9	6.1	6.1	6.3	5.9	6.0	6.2
110-290	6.6	6.6	6.0	5.5	6.1	6.8	6.7	6.1	6.0	6.3	6.0	6.1	6.1
110-291	6.8	6.7	6.2	5.6	6.2	7.1	6.9	6.3	6.1	6.4	6.1	6.2	6.3
110-292	6.8	6.6	6.2	5.5	6.3	7.0	6.9	6.3	6.2	6.4	6.2	6.3	6.3
110-293	6.7	6.7	6.2	5.7	6.1	7.0	6.6	6.4	6.2	6.2	6.1	6.3	6.4
110-294	6.7	6.7	6.2	5.5	6.2	7.0	6.8	6.3	6.3	6.4	6.1	6.2	6.3
Average	6.7	6.7	6.1	5.5	6.2	7.0	6.8	6.3	6.2	6.3	6.1	6.2	6.3
Std Dev	0.06	0.06	0.15	0.08	0.09	0.11	0.10	0.12	0.11	0.09	0.08	0.10	0.09
MDL	0.20	0.18	0.48	0.26	0.28	0.34	0.32	0.38	0.33	0.27	0.27	0.31	0.29
3XMDL	0.60	0.55	1.43	0.77	0.85	1.03	0.96	1.14	1.00	0.82	0.80	0.92	0.86

HCB = Hexachlorobutadiene, LIND = Lindane, HEPT = Heptachlor.

MDLs were determined using 3g of tissue. MDLs for samples that are smaller that 3g will need to be adjusted for the difference in sample weight.

Table 1N-p1: GC/MS confirmation of pesticides in 10% of the flatfish tissue samples analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study. (Concentrations shown are originally reported data determined by GC/ECD, Table 1B.)

Set#	Sample#	Jar #*	HCBD[1]	HCB[1]	LIND[2]	HEPT[2]	Aldrin[2]	$\alpha + \gamma$ Chlordane[1]	Dieldrin[2]	p,p'-DDE[1]	p,p'-DDD[1]	p,p'-DDT[1]
H308	110-465	94.3575,3576,3577	0.96	7.1	3	< 0.13	< 0.087	1.6	3.3	30.4	116	90.4
H309	110-376	94.3594A, 3595, 3602	11.2	20.2	< 0.15	< 0.14	< 0.089	1.8	0.84	1.5	3.8	8.4

HCBD = hexachlorobutadiene; HCB = hexachlorobenzene; LIND = lindane; HEPT = heptachlor

*Jar #s represent official Hylebos Damage Assessment sampling numbers. If more than one jar # is given, the sample analyzed was a composite of those jars.

[1] The presence of this analyte has been confirmed by GC/MS using a selected ion monitoring mode for the samples listed.
[2] The concentration of this analyte was too low to be confirmed by GC/MS in these tissue samples.

Approximate detection limits determined by GC/MS (based on the CH3E1 ML Std for chlorinated pesticides) range from ≈0.5 to ≈ 3 ng/g.

Table 1O-p1: GC/MS confirmation of chlorobiphenyl congeners (chlorination level/IUPAC number) in 10% of the flatfish tissue samples analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study. (Concentrations shown are originally reported data determined by GC/ECD, Table 1C.)

Sample#	3/18[1]	3/28[1]	4/44[1]	4/52[1]	4/66[1]	5/101[1]	5/105[1]	5/118[1]	6/128[1]	6/138[1]	6/153[1]	7/170[1]	7/180[1]	7/187[1]	8/195[1]	9/206[1]	10/209[1]
110-465	6.8	6.7	36.2	110	35.2	286	59.2	190	14.4	100	111	9.2	3.2	6.6	0.35	2.6	1.9
110-376	< 0.31	1.6	3.2	7.2	1.2	10.1	2.3	9.2	2	10.7	13.6	2.6	1.7	3.1	0.65	5	6.1

[1]The presence of this analyte has been confirmed by GC/MS using a selected ion monitoring mode for the samples listed.

Detection limits determined by GC/MS (based on the CH3E1 ML Std for chlorobiphenyl congeners) range from ≈0.5 to ≈1 ng/g.

Hylebos Reproductive Toxicology in Flatfish Study.

Analyses for Aromatic Hydrocarbons
Table 2 Notes

The concentrations of the analytes naphthalene and 2-methyinaphthalene were calculated using naphthalene-d8 as the surrogate standard; analytes from acenaphthylene through pyrene were calculated using acenaphthene-d10 as the surrogate standard; and analytes from benz[alanthracene through benzo[ghi]perylene were calculated using benzo[a]pyrene-d12 as the surrogate standard.

The “less than” symbol (<) indicates that the analyte was not detected in concentrations above the stated value.

Results were determined by gas chromatography/mass spectrometry (GC/MS).

Concentrations less than 10 ng/g are rounded to two significant figures; concentrations greater than or equal to 10 ng/g are rounded to three significant figures.

The percent recoveries of the surrogate standards were calculated using phenanthrene-d10 to correct for the fraction of the total extract used for the HPLC clean-up step.

Set # and Sample # designations are intended for internal lab use and identification only. Jar # and site name represent Hylebos Damage Assessment official sample identification designations.

The sample weights used to calculate concentrations for the method blank are the mean sample weights calculated for the field samples in the same set.

Table 2A-p1: Sample information for flatfish stomach contents analyzed for aromatic hydrocarbons as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Set #	Sample#	Sample Type	Species	Jar #*	Site	Date Collected	Sample Wt. (g)	DNPH Rec. (%)	DACE Rec. (%)	DBAP Rec. (%)
H308	110-461	Tissue - stomach contents	English sole	94.3515,3516,3543	COLVOS PASSAGE	12/2/94	1.07	87	80	88
H308	110-462	Tissue - stomach contents	English sole	94.3529,3537	COLVOS PASSAGE	12/2/94	0.95	85	81	84
H308	110-463	Tissue - stomach contents	English sole	94.3530,3531	COLVOS PASSAGE	12/2/94	1.19	83	78	77
H308	110-464	Tissue - stomach contents	English sole	94.3548,3550,3585	HYLEBOS WATERWAY	12/5/94	1.90	80	79	83
H308	110-465	Tissue - stomach contents	English sole	94.3575,3576,3577	HYLEBOS WATERWAY	12/5/94	3.01	62	71	78
H309	110-375	Tissue - stomach contents	English sole	94.3589, 3592, 3588	HYLEBOS WATERWAY	12/6/94	2.94	73	85	88
H309	110-376	Tissue - stomach contents	English sole	94.3594A, 3595, 3602	HYLEBOS WATERWAY	1/4/95	2.90	67	78	86
H309	110-377	Tissue - stomach contents	English sole	94.3603, 3629, 3630	HYLEBOS WATERWAY	1/4/95	2.51	72	83	87
H309	110-379	Tissue - stomach contents	English sole	94.3603, 3629, 3630	HYLEBOS WATERWAY	1/4/95	2.13	71	81	83
H309	110-378	Tissue - stomach contents	English sole	94.3634, 3645, 3647, 3649	HYLEBOS WATERWAY	1/4/95	2.50	73	83	84
H309	110-380	Tissue - stomach contents	English sole	94.3651/3652, 3654/3656	COLVOS PASSAGE	1/6/95	3.04	78	83	86
H309	110-381	Tissue - stomach contents	English sole	94.3657, 3658	COLVOS PASSAGE	1/6/95	2.55	77	82	87
H309	110-382	Tissue - stomach contents	English sole	94.3659, 3662, 3669/3671, 3682,	COLVOS PASSAGE	12/6/94	2.89	79	85	90

DNPH = naphthalene-d8; DACE = acenaphthene-d10; DBAP = benzo[a]pyrene-d12.

*Jar #s represent official Hylebos Damage Assessment sampling numbers. If more than one jar # is given, the sample analyzed was a composite of those jars.

Table 2B-p1: Concentrations (ng/g, wet weight) of aromatic hydrocarbons in flatfish stomach contents analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	NPH	2MN	ACY	ACE	FLU	PHN	ANT	ΣLAHs	FLA	PYR	BAA	CHR	BFLA	BAP	IDP	DBA	BZP	ΣHAHs
110-462	2.1	1.9	< 0.22	< 0.3	0.36	1.5	< 0.19	5.9	2.3	2.3	0.57	1.3	2.4	0.69	1	< 0.1	1.2	11.8
110-461	3.2	3.2	< 0.21	0.36	0.55	3.4	0.57	11.3	6.1	5.4	1.6	3.2	5.6	1.4	2	0.27	2.3	27.9
110-463	1.9	2.1	< 0.29	< 0.39	0.51	3	0.38	7.9	6.8	5.9	1.6	3.7	6.7	1.9	2.3	0.3	2.5	31.6
110-464	72.7	14.9	6.3	5.9	8.5	51.6	20.9	181	198	244	68.5	120	221	40.4	22.1	5.9	28.3	948
110-465	43	35	44.2	102	116	766	380	1490	3780	5130	736	1400	965	231	66.8	20.9	6.3	12300
110-375	5.2	3.4	1.4	1.9	3.3	24	11.3	50.6	111	143	42.9	103	113	35.2	16.7	5.2	24.2	594
110-376	10.6	6.9	2.7	3.3	5.8	35.8	17.8	83	185	243	77.3	157	188	57.6	25.6	5.6	34.6	973
110-377	9.3	6.7	2.9	2.7	6	36.9	29.2	93.8	253	251	96.5	174	189	57.3	24.6	7.2	31.8	1090
110-379	9.8	14.4	8.8	41.9	72.8	497	142	786	2050	1100	291	344	220	81.4	19	5.3	27	4140
110-378	6.7	12	8.5	44.2	76.7	516	148	813	2100	1140	294	339	200	74	14.3	4.5	22.9	4190
110-380	1.3	0.84	< 0.3	< 0.41	< 0.32	1.7	< 0.21	3.8	3.9	3.9	1.5	2.7	4.5	1.3	1.2	0.14	1.7	20.7
110-381	2	1.9	< 0.47	< 0.63	< 0.49	2.5	0.47	6.9	7.2	8.1	2.6	6	8.7	2.4	2.3	0.36	3	40.8
110-382	1.8	1.5	< 0.39	< 0.53	0.48	2.2	0.52	6.6	7.2	7.2	2.3	5.1	7.6	2	1.8	0.32	2.8	36.4

NPH = naphthalene; 2MN = 2-methylnaphthalene; ACY = acenaphthylene; ACE = acenaphthene; FLU = fluorene; PHN = phenanthrene; ANT = anthracene; FLA = fluoranthene; PYR = pyrene; BAA = benz[a]anthracene; CHR = chrysene; BFLA = benzo[b]fluoranthene + benzo[k]fluoranthene; BAP = benzo[a]pyrene; IDP = indeno[1,2,3-cd]pyrene; DBA = dibenz[a,h]anthracene; BZP = benzo[ghi]perylene.

ΣLAHs = NPH + 2MN + ACY + ACE + FLU + PHN + ANT; ΣHAHs = FLA + PYR + BAA + CHR + BLFA + BAP + IDP + DBA + BZP.

† Chrysene (CHR) and triphenylene are not resolved by our gas chromatographic procedure. In addition, the two compounds have very similar spectra, therefore we report their combined concentrations as "CHR".

Table 2C-p1: Quality assurance sample information in method blanks and standard reference material (SRM 1974a) analyzed for aromatic hydrocarbons as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Set #	Sample #	Sample type	Sample Wt. (g)	DNPH Rec. (%)	DACE Rec. (%)	DBAP Rec. (%)
Method Blank						
H309	110-384	Method Blank	2.68	79	86	73
H308	110-467	Method Blank	2.04	85	79	50
SRM 1974a						
H309	110-383	SRM 1974a	2.95	50	82	86
H308	110-466	SRM 1974a	3.01	84	79	80

DNPH = naphthalene-d8; DACE = acenaphthene-d10; DBAP = benzo[a]pyrene-d12.

Table 2D-p1: QA: Concentrations (ng/g, wet weight) of aromatic hydrocarbons in method blanks and standard reference material (SRM 1974a) analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	Sample Type	NPH	2MN	ACY	ACE	FLU	PHN	ANT	ΣLAHs	FLA	PYR	BAA	CHR†	BFLA	BAP	IDP	DBA	BZP	ΣHAHs
Method Blank																			
110-384	Method Blank	1.3	0.83	< 0.36	< 0.5	< 0.38	0.33	< 0.25	2.4	< 0.21	< 0.2	< 0.24	< 0.23	< 0.17	< 0.19	< 0.17	< 0.17	< 0.16	0
110-467	Method Blank	0.77	0.55	< 0.19	< 0.26	< 0.22	0.3	< 0.17	1.6	0.17	0.13	< 0.22	< 0.17	< 0.13	< 0.14	< 0.16	< 0.15	< 0.12	.29
	Average*	1.02	0.69	0.00	0.00	0.00	0.31	0.00	2.0	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1
	Standard Deviation	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1.
	Relative Standard Dev.	24.4%	20.5%	?	?	?	3.8%	?	19.9%	100.0%	100.0%	?	?	?	?	?	?	?	100.0%
SRM 1974a																			
110-383	SRM 1974a	2.4	1.8	0.34	< 0.45	0.43	2.4	0.38	7.8	23.2	22	3.4	10.9	9.5	1.7	1.3	0.28	2.9	75.2
110-466	SRM 1974a	1.3	1	0.5	< 0.34	0.45	2.8	0.87	7	28.7	27.4	4.9	11.8	10.6	2.1	1.7	0.32	3.4	90.8
	Average*	1.89	1.42	0.42	0.00	0.44	2.57	0.63	7.4	25.96	24.70	4.14	11.34	10.05	1.86	1.50	0.30	3.13	83.0
	Standard Deviation	0.5	0.4	0.1	0.0	0.0	0.2	0.2	0.4	2.7	2.7	0.8	0.4	0.6	0.2	0.2	0.0	0.3	7.8
	Relative Standard Dev.	28.9%	28.7%	19.7%	?	2.8%	7.9%	38.8%	5.6%	10.5%	10.8%	18.2%	3.9%	5.5%	11.2%	10.6%	6.3%	8.5%	9.4%
SRM 1974a Certified Concentrations (ng/g, wet wt)	$\bar{x}$	2.66	1.16[1]	0.598[1]	0.359[1]	0.65[1]	2.66	0.69		18.6	17.3	3.7	5.04	7.58[1]	1.78	1.62	0.142[1]	2.50	
	95% CI	0.50					0.28	0.20		1.0	0.74	0.54	0.26		0.073	0.32		0.25	
	UCL	4.29					4.00	1.20		26.5	24.3	5.74	7.16		2.50	2.62		3.71	
	LCL	1.42					1.56	0.32		11.4	10.7	2.06	3.11		1.11	0.85		1.46	
SRM 1974a Previously Analyzed Concs (ng/g, wet wt, n=6)	$\bar{x}$	2.2	1.7	0.42	nd	0.48	2.4	0.81		25	23.	4.0	11	9.2	2.0	2.0	0.36	3.0	
	S.D.	0.5	0.4	0.06	--	0.05	0.2	0.16		2.3	2.2	0.6	0.4	0.3	0.1	0.2	0.07	0.3	

NPH = naphthalene; 2MN = 2-methylnaphthalene; ACY = acenaphthylene; ACE = acenaphthene; FLU = fluorene; PHN = phenanthrene; ANT = anthracene; FLA = fluoranthene; PYR = pyrene; BAA = benz[a]anthracene; CHR = chrysene; BFLA = benzo[b]fluoranthene + benzo[k]fluoranthene; BAP = benzo[a]pyrene; IDP = indeno[1,2,3-cd]pyrene; DBA = dibenz[a,h]anthracene; BZP = benzo[ghi]perylene.

ΣLAHs = NPH + 2MN + ACY + ACE + FLU + PHN + ANT; ΣHAHs = FLA + PYR + BAA + CHR + BLFA + BAP + IDP + DBA + BZP.

$\bar{x}$ = the average concentration (ng/g, wet wt); 95% CI = the 95% confidence interval; UCL = the upper confidence limit (95% confidence limit + 35%); LCL = the lower confidence limit (95% confidence limit - 35%).

n = the number of values being averaged; S.D.= the standard deviation; nd = not detected in previous samples, or detected at levels below the limit of detection.

† Chrysene (CHR) and triphenylene are not resolved by our gas chromatographic procedure, whereas these compounds are resolved by the NIST procedure. In addition, the two compounds have very similar mass spectra, therefore we report their combined concentrations as "CHR". Consequently, the value we report for CHR is higher than the NIST value.

[1]2MN, ACY, ACE, FLU, BFLA, and DBA are reported as noncertified values.

* When an analyte was detected in some, but not all of the method blanks or SRMs, the average concentration is based on the concentration when detected and zero when not detected. When an analyte was not detected in any of the method blanks or SRMs, zero is reported for the average and the SD and a "?" is reported for the RSD.

Table 2E-p1: QA: Sample information for flatfish stomach contents analyzed in replicate for aromatic hydrocarbons as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Set #	Sample #	Sample Type	Species	Site	Date Collected	Sample Wt. (g)	DNPH Rec. (%)	DACE Rec. (%)	DBAP Rec. (%)
H309	110-378	Tissue - stomach contents	English sole	HYLEBOS WATERWAY	1/4/95	2.50	73	83	84
H309	110-379	Tissue - stomach contents	English sole	HYLEBOS WATERWAY	1/4/95	2.13	71	81	83

DNPH = naphthalene-d8; DACE = acenaphthene-d10; DBAP = benzo[a]pyrene-d12

Replicate sample analyses are identified by jar #.

*Jar #s represent official Hylebos Damage Assessment sampling numbers. If more than one jar # is given, the sample analyzed was a composite of those jars.

Table 2F-p1: QA: Concentrations (ng/g, wet weight) of aromatic hydrocarbons in flatfish stomach contents analyzed in replicate as part of the Hylebos Reproductive Toxicology in Flatfish Study.

Sample #	NPH	2MN	ACY	ACE	FLU	PHN	ANT	ΣLAHs	FLA	PYR	BAA	CHR	BFLA	BAP	IDP	DBA	BZP	ΣHAHs
Tissue - stomach contents																		
110-378	6.7	12	8.5	44.2	76.7	516	148	813	2100	1140	294	339	200	74	14.3	4.5	22.9	4190
110-379	9.8	14.4	8.8	41.9	72.8	497	142	786	2050	1100	291	344	220	81.4	19	5.3	27	4140
Average	8.3	13.2	8.6	43.1	74.7	506.4	145.2	799.5	2075	1121	293	342	210	78	17	5	25	4164.2
Standard Deviation	1.6	1.2	0.1	1.1	2.0	9.7	3.3	13.19	22.5	19.0	1.4	2.2	9.9	3.7	2.3	0.4	2.1	22.30
Relative Standard Dev.	19.2%	9.0%	1.5%	2.7%	2.6%	1.9%	2.3%	1.6%	1.1%	1.7%	0.5%	0.6%	4.7%	4.8%	14.1%	7.9%	8.3%	0.5%

NPH = naphthalene; 2MN = 2-methylnaphthalene; ACY = acenaphthylene; ACE = acenaphthene; FLU = fluorene; PHN = phenanthrene; ANT = anthracene; FLA = fluoranthene; PYR = pyrene; BAA = benz[a]anthracene; CHR = chrysene; BFLA = benzo[b]fluoranthene + benzo[k]fluoranthene; BAP = benzo[a]pyrene; IDP = indeno[1,2,3-cd]pyrene; DBA = dibenz[a,h]anthracene; BZP = benzo[ghi]perylene.

ΣLAHs = NPH + 2MN + ACY + ACE + FLU + PHN + ANT; ΣHAHs = FLA + PYR + BAA + CHR + BLFA + BAP + IDP + DBA + BZP.

Replicate sample analyses are identified by jar #.

† Chrysene (CHR) and triphenylene are not resolved by our gas chromatographic procedure. In addition, the two compounds have very similar spectra, therefore we report their combined concentrations as "CHR".

Table 2G-p1: Standard curve correlation (r) from the linear regression of the concentration of the analyte to the area response for the multilevel standards.

Analyte	H308 r	H309 r
naphthalene	0.9999	0.9999
2-methylnaphthalene	0.9998	1.0000
acenaphthylene	0.9994	0.9996
acenaphthene	0.9998	1.0000
fluorene	0.9997	1.0000
phenanthrene	0.9998	1.0000
anthracene	0.9996	1.0000
fluoranthene	0.9997	1.0000
pyrene	0.9997	0.9999
benz[a]anthracene	0.9994	0.9998
chrysene	0.9998	0.9999
benzofluoranthenes (b+k)	0.9997	0.9998
benzo[a]pyrene	0.9998	0.9999
indeno[1,2,3-cd]pyrene	0.9995	0.9998
dibenz[a,h]anthracene	0.9995	0.9995
benzo[ghi]perylene	0.9998	0.9997
d8-naphthalene	0.9999	0.9999
d10-acenaphthene	0.9998	1.0000
d12-benzo[a]pyrene	0.9997	0.9998

Based on five concentration levels of standards.

Table 2H-p1: Continuing calibration verification data* for aromatic hydrocarbons in standards run before, during and after the samples in a tissue set analyzed as part of the Hylebos Reproductive Toxicology in Flatfish Study.

ML Name	NPH	2MN	ACY	ACE	FLU	PHN	ANT	FLA	PYR	BAA	CHR	BFLA	BAP	IDP	DBA	BZP
H308																
H308AH4J2A	116	118	101	105	104	100	94	93	92	84	98	89	92	77	78	80
H308AH4J2B	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
H308AH4J2C	99	126	107	106	100	99	105	100	97	106	95	95	91	102	100	92
Average	105	114	103	104	101	100	100	98	97	96	98	95	94	93	93	91
SD	7.7	10.7	3.3	2.8	2.0	0.4	4.2	3.4	3.3	9.3	2.0	4.3	4.0	11.3	10.4	8.2
RSD	7.3%	9.3%	3.2%	2.6%	1.9%	0.4%	4.2%	3.4%	3.4%	9.6%	2.1%	4.6%	4.3%	12.1%	11.2%	9.1%
H309																
H309AH4J2A	90	95	95	96	99	100	98	98	100	100	102	102	95	102	102	101
H309AH4J2B	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
H309AH4J2C	89	94	94	90	97	99	97	90	92	85	86	85	83	81	81	80
Average	93	96	96	95	99	100	98	96	97	95	96	96	93	94	94	94
SD	5.0	2.8	2.6	4.0	1.2	0.6	1.3	4.2	3.6	7.0	7.4	7.9	7.1	9.5	9.3	9.7
RSD	5.4%	2.9%	2.7%	4.2%	1.2%	0.6%	1.3%	4.4%	3.7%	7.4%	7.7%	8.3%	7.6%	10.1%	9.9%	10.4%

NPH = naphthalene; 2MN = 2-methylnaphthalene; ACY = acenaphthylene; ACE = acenaphthene; FLU = fluorene; PHN = phenanthrene; ANT = anthracene; FLA = fluoranthene; PYR = pyrene; BAA = benz[a]anthracene; CHR = chrysene; BFLA = benzo[b]fluoranthene + benzo[k]fluoranthene; BAP = benzo[a]pyrene; IDP = indeno[1,2,3-cd]pyrene; DBA = dibenz[a,h]anthracene; BZP = benzo[ghi]perylene.

*Data are reported as percent recovery calculated using the -B standard.

Table 2I-p1: Concentrations of analytes in 7 replicates of spiked clean matrix and calculated method detection limits (MDL, ng/g, wet weight) for aromatic hydrocarbons. MDLs were calculated by the method in appendix B of 40CFR part 136 (sample set H288, 3/95).

Sample	NPH	2MN	ACY	ACE	FLU	PHN	ANT	FLA	PYR	BAA	CHR	BBF	BKF	BAP
110-288	10.1	8.2	5.8	6.3	6.4	7.2	4.9	7.1	6.8	4.4	4.9	5.0	5.3	4.6
110-289	11.0	8.1	5.9	6.6	6.6	7.3	4.9	7.1	7.0	4.5	5.1	5.1	5.6	4.7
110-290	9.6	7.8	5.6	6.3	6.3	6.9	4.6	6.7	6.6	4.4	5.0	4.9	5.2	4.5
110-291	9.9	7.9	5.7	6.5	6.3	7.1	4.8	6.9	6.8	4.7	5.3	5.0	5.5	4.8
110-292	10.4	8.0	5.8	6.6	6.6	7.3	4.9	7.2	7.2	4.7	5.5	5.1	5.6	4.7
110-293	10.0	7.7	5.8	6.6	6.5	7.3	4.8	7.0	6.9	4.6	5.4	4.8	5.7	4.6
110-294	9.9	7.6	5.3	6.2	6.2	7.0	4.6	7.0	6.8	4.4	5.2	4.6	5.6	4.5
Average	10.1	7.9	5.7	6.5	6.4	7.1	4.8	7.0	6.9	4.5	5.2	4.9	5.5	4.6
Std Dev	0.47	0.21	0.18	0.18	0.16	0.16	0.15	0.16	0.18	0.14	0.20	0.20	0.19	0.12
MDL	1.47	0.66	0.57	0.55	0.51	0.51	0.48	0.52	0.56	0.45	0.64	0.62	0.60	0.37
3XMDL	4.40	1.99	1.70	1.66	1.54	1.52	1.44	1.55	1.67	1.35	1.91	1.85	1.80	1.12

Sample	IDP	DBA	BZP
110-288	4.1	3.7	4.4
110-289	4.8	3.8	4.4
110-290	4.6	3.9	4.4
110-291	4.6	3.9	4.5
110-292	4.6	3.8	4.5
110-293	4.1	3.7	4.4
110-294	3.8	3.1	3.6
Average	4.4	3.7	4.3
Std Dev	0.37	0.28	0.33
MDL	1.17	0.87	1.03
3XMDL	3.50	2.62	3.08

NPH = naphthalene; 2MN = 2-methylnaphthalene; ACY = acenaphthylene; ACE = acenaphthene; FLU = fluorene; PHN = phenanthrene; ANT = anthracene; FLA = fluoranthene; PYR = pyrene; BAA = benz[a]anthracene; CHR = chrysene; BBF = benzo[b]fluoranthene; BBK = benzo[k]fluoranthene; BAP = benzo[a]pyrene; IDP = indeno[1,2,3-cd]pyrene; DBA = dibenz[a,h]anthracene; BZP = benzo[ghi]perylene.

MDLs were determined using 3g of tissue. MDLs for samples that are smaller that 3g will need to be adjusted for the difference in sample weight.