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Date 5/12/2023
From HHEAR Data Center
Subject HHEAR Project #2020-00605– Polychlorinated biphenyls (SPCBs) in plasma
To Noyan Gokce, MD

The polychlorinated biphenyls (SPCBs) in plasma data (N=130) analyzed by the Wadsworth HHEAR Targeted Analysis Laboratory for HHEAR project #2020-00605 is now finalized and available on the HHEAR Data Submission and Review Portal (DSRP). The biomarkers in this dataset include 43 individual or co-eluted summed combinations of polychlorinated biphenyls and are listed in the summary tables below.

The limit of detection (LOD) values reported were the average of the daily LODs for the whole study. The daily LODs were used to identify the valid values for each sample. Machine-read values were provided for all measurements. Negative values arise legitimately near the LOD, which is by definition +/- 33% of the 'blank' level. The following approaches can be considered for utilizing biomarker values below the LOD:

- Use the machine values.
- Substitute a surrogate value for all values <=LOD, which is often LOD/sqrt2, first recommended by Hornung and used by CDC [1].
- Use a multiple imputation method [2]. In general, a surrogate value is not used in models with continuous variables unless >60% of the observations are >LOD, as described in Lubin.

Three samples each of HHEAR targeted serum pools A and B were run across batches.

These laboratory results have been reviewed and approved by Sunmi Lee, MS, Research Scientist (sunmi.lee@nyulangone.org) at the Wadsworth HHEAR Targeted Analysis Laboratory for HHEAR to assure that they conform to acceptable quality standards[3]. Summary tables of the study sample data and relevant quality control data are appended at the end of this document.

Signed,

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Statistical Analyst

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REPORT OF LAB RESULTS

1 - Summary Table of Sample Data:

Geometric mean and geometric standard deviation, along with the percentile distribution, calculated for study samples with detectable levels (NC- not calculated when detection frequency was less than 70%).

Analyte	Number of Samples Analyzed	Number of Samples >LOD	Percent Detect	LOD	Geometric Mean	Geometric Mean STD	Min	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	Max
PCB105_PCB127 (ng/mL)	130	72	55%	0.00520	NC	NC	<LOD	<LOD	<LOD	0.00600	0.0122	0.0224	0.0705
PCB110 (ng/mL)	130	53	41%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00693	0.0163	0.0870
PCB114_PCB122 (ng/mL)	130	15	12%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00605	0.0211
PCB118_PCB106 (ng/mL)	130	124	95%	0.00510	0.0217	2.49	<LOD	0.00638	0.00981	0.0178	0.0384	0.0812	0.263
PCB128 (ng/mL)	130	2	2%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.0186
PCB137 (ng/mL)	130	8	6%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.0410
PCB138_PCB158 (ng/mL)	130	128	98%	0.00520	0.0482	2.90	<LOD	0.0112	0.0181	0.0467	0.111	0.212	0.558
PCB146_PCB161 (ng/mL)	130	63	48%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	0.0131	0.0280	0.106
PCB153 (ng/mL)	130	128	98%	0.00520	0.0549	3.18	<LOD	0.0105	0.0221	0.0532	0.134	0.289	0.703
PCB156 (ng/mL)	130	65	50%	0.00520	NC	NC	<LOD	<LOD	<LOD	0.00253	0.0141	0.0371	0.156
PCB157 (ng/mL)	130	20	15%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00961	0.0354
PCB167 (ng/mL)	130	29	22%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.0121	0.0355
PCB170 (ng/mL)	130	95	73%	0.00530	0.0201	2.58	<LOD	<LOD	<LOD	0.0114	0.0339	0.0645	0.198
PCB172_PCB192 (ng/mL)	130	20	15%	0.00530	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00764	0.0280
PCB177 (ng/mL)	130	17	13%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00702	0.0295

Analyte	Number of Samples Analyzed	Number of Samples >LOD	Percent Detect	LOD	Geometric Mean	Geometric Mean STD	Min	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	Max
PCB180 (ng/mL)	130	118	91%	0.00530	0.0319	3.24	<LOD	0.00527	0.00863	0.0230	0.0740	0.176	0.498
PCB182_PCB187 (ng/mL)	130	83	64%	0.00520	NC	NC	<LOD	<LOD	<LOD	0.00833	0.0203	0.0436	0.142
PCB183 (ng/mL)	130	49	38%	0.00520	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00754	0.0132	0.0411
PCB18_PCB17 (ng/mL)	130	53	41%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00739	0.0105	0.0678
PCB194 (ng/mL)	130	53	41%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	0.0121	0.0265	0.0914
PCB195 (ng/mL)	130	30	23%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00751	0.0183
PCB196_PCB203 (ng/mL)	130	73	56%	0.00500	NC	NC	<LOD	<LOD	<LOD	0.00659	0.0172	0.0306	0.124
PCB199 (ng/mL)	130	51	39%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	0.0137	0.0306	0.0877
PCB202 (ng/mL)	130	25	19%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00836	0.0351
PCB206 (ng/mL)	130	44	34%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00817	0.0210	0.0632
PCB208 (ng/mL)	130	17	13%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00636	0.0272
PCB209 (ng/mL)	130	30	23%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00973	0.0464
PCB22 (ng/mL)	130	24	18%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00619	0.0331
PCB31_PCB28 (ng/mL)	130	101	78%	0.00500	0.0242	1.93	<LOD	<LOD	0.00664	0.0196	0.0335	0.0472	0.262
PCB33_PCB20 (ng/mL)	130	52	40%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00737	0.0105	0.0690
PCB37 (ng/mL)	130	51	39%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00762	0.0102	0.0507
PCB41_PCB64 (ng/mL)	130	17	13%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00733	0.0447
PCB44 (ng/mL)	130	15	12%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00583	0.0495
PCB47_48_75 (ng/mL)	130	20	15%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00720	0.0562

Analyte	Number of Samples Analyzed	Number of Samples >LOD	Percent Detect	LOD	Geometric Mean	Geometric Mean STD	Min	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	Max
PCB49_PCB43 (ng/mL)	130	11	8%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.0527
PCB52_PCB73 (ng/mL)	130	41	32%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00883	0.0148	0.150
PCB5_PCB8 (ng/mL)	130	26	20%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00909	0.0414
PCB70_PCB76 (ng/mL)	130	34	26%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00528	0.0104	0.129
PCB73_PCB95 (ng/mL)	130	37	28%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00602	0.0145	0.120
PCB74_PCB61 (ng/mL)	130	90	69%	0.00510	NC	NC	<LOD	<LOD	<LOD	0.00935	0.0210	0.0568	0.203
PCB85_PCB120 (ng/mL)	130	4	3%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	0.0176
PCB90_101_89 (ng/mL)	130	33	25%	0.00510	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00555	0.0145	0.0870
PCB99 (ng/mL)	130	105	81%	0.00510	0.0155	2.14	<LOD	<LOD	0.00547	0.0112	0.0201	0.0393	0.188

2 - Summary Table of HHEAR QC Pools: HHEAR QC Pools Summary Table (Overall) – Three samples each of HHEAR QC Serum Pools A and B were run along with the study samples in this analysis. Overall means and coefficients of variation were calculated for each pool. Note that results near the LOD are subject to greater uncertainty. *NC- not calculated*

Analyte	Pool	LOD	Total N	Valid N	% Valid	Mean	CV (%)
PCB105_PCB127 (ng/mL)	**H-A**	0.0052	3	2	67	0.00625	4
	H-B	0.0052	3	0	0	NC	NC
PCB110 (ng/mL)	**H-A**	0.0051	3	1	33	0.00860	NC
	H-B	0.0051	3	0	0	NC	NC
PCB118_PCB106 (ng/mL)	**H-A**	0.0051	3	3	100	0.0142	15
	H-B	0.0051	3	0	0	NC	NC
PCB128 (ng/mL)	**H-A**	0.0052	3	0	0	NC	NC
	H-B	0.0052	3	0	0	NC	NC
PCB138_PCB158 (ng/mL)	**H-A**	0.0052	3	3	100	0.0796	5
	H-B	0.0052	3	0	0	NC	NC
PCB146_PCB161 (ng/mL)	**H-A**	0.0052	3	0	0	NC	NC
	H-B	0.0052	3	0	0	NC	NC
PCB153 (ng/mL)	**H-A**	0.0052	3	3	100	0.0994	5
	H-B	0.0052	3	0	0	NC	NC
PCB156 (ng/mL)	**H-A**	0.0052	3	3	100	0.0111	8
	H-B	0.0052	3	0	0	NC	NC

Analyte	Pool	LOD	Total N	Valid N	% Valid	Mean	CV (%)
PCB157 (ng/mL)	**H-A**	0.0052	3	0	0	NC	NC
	H-B	0.0052	3	0	0	NC	NC
PCB167 (ng/mL)	**H-A**	0.0052	3	0	0	NC	NC
	H-B	0.0052	3	0	0	NC	NC
PCB170 (ng/mL)	**H-A**	0.0053	3	3	100	0.0269	3
	H-B	0.0053	3	0	0	NC	NC
PCB172_PCB192 (ng/mL)	**H-A**	0.0053	3	0	0	NC	NC
	H-B	0.0053	3	0	0	NC	NC
PCB177 (ng/mL)	**H-A**	0.0052	3	0	0	NC	NC
	H-B	0.0052	3	0	0	NC	NC
PCB180 (ng/mL)	**H-A**	0.0053	3	3	100	0.0773	10
	H-B	0.0053	3	2	67	0.00677	8
PCB182_PCB187 (ng/mL)	**H-A**	0.0052	3	3	100	0.0200	13
	H-B	0.0052	3	0	0	NC	NC
PCB183 (ng/mL)	**H-A**	0.0052	3	3	100	0.00557	3
	H-B	0.0052	3	0	0	NC	NC
PCB194 (ng/mL)	**H-A**	0.0050	3	3	100	0.0154	16
	H-B	0.0050	3	0	0	NC	NC
PCB195 (ng/mL)	**H-A**	0.0050	3	0	0	NC	NC
	H-B	0.0050	3	0	0	NC	NC

Analyte	Pool	LOD	Total N	Valid N	% Valid	Mean	CV (%)
PCB196_PCB203 (ng/mL)	**H-A**	0.0050	3	3	100	0.0237	3
	H-B	0.0050	3	0	0	NC	NC
PCB199 (ng/mL)	**H-A**	0.0050	3	3	100	0.0224	12
	H-B	0.0050	3	0	0	NC	NC
PCB206 (ng/mL)	**H-A**	0.0050	3	3	100	0.0110	14
	H-B	0.0050	3	0	0	NC	NC
PCB209 (ng/mL)	**H-A**	0.0050	3	3	100	0.00635	13
	H-B	0.0050	3	0	0	NC	NC
PCB31_PCB28 (ng/mL)	**H-A**	0.0050	3	3	100	0.0108	1
	H-B	0.0050	3	3	100	0.0265	24
PCB44 (ng/mL)	**H-A**	0.0051	3	0	0	NC	NC
	H-B	0.0051	3	0	0	NC	NC
PCB49_PCB43 (ng/mL)	**H-A**	0.0051	3	0	0	NC	NC
	H-B	0.0051	3	0	0	NC	NC
PCB52_PCB73 (ng/mL)	**H-A**	0.0051	3	0	0	NC	NC
	H-B	0.0051	3	0	0	NC	NC
PCB74_PCB61 (ng/mL)	**H-A**	0.0051	3	1	33	0.00519	NC
	H-B	0.0051	3	0	0	NC	NC
PCB90_101_89 (ng/mL)	**H-A**	0.0051	3	0	0	NC	NC
	H-B	0.0051	3	0	0	NC	NC

Analyte	Pool	LOD	Total N	Valid N	% Valid	Mean	CV (%)
PCB99 (ng/mL)	**H-A**	0.0051	3	3	100	0.00875	11
	H-B	0.0051	3	0	0	NC	NC

References:

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