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Date 3/24/2023
From HHEAR Data Center
Subject HHEAR Project #2020-00605– Organochlorine Pesticides (SOCs) in plasma
To Noyan Gokce, MD

The organochlorine pesticides (SOCs) 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). Biomarkers in this dataset include beta-hexachlorocyclohexane (BHCH), hexachlorobenzene (HCB), 4,4'-DDE (PPDDE), 4,4'-DDT (PPDDT), trans-chlordane (TCHL), trans-nonachlor (TNON), oxychlordane (OCHL), and p,p'-DDD (PPDDD).

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.

Four 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

Susan Teitelbaum, Ph.D.
Principal Investigator, HHEAR Data Center, Mount Sinai

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
BHCH (ng/mL)	130	110	85%	0.00250	0.0187	3.09	<LOD	<LOD	0.00485	0.0130	0.0324	0.0780	0.462
HCB (ng/mL)	130	127	98%	0.00250	0.0620	2.00	<LOD	0.0218	0.0443	0.0678	0.0925	0.130	0.364
OCHL (ng/mL)	130	124	95%	0.00500	0.0200	2.43	<LOD	0.00593	0.00901	0.0166	0.0368	0.0643	0.194
PPDDD (ng/mL)	130	61	47%	0.00250	NC	NC	<LOD	<LOD	<LOD	<LOD	0.00444	0.00670	0.00989
PPDDE (ng/mL)	130	130	100%	0.00500	0.486	2.40	0.0779	0.186	0.260	0.405	0.860	1.88	3.96
PPDDT (ng/mL)	130	118	91%	0.00250	0.0117	2.14	<LOD	0.00262	0.00589	0.0110	0.0167	0.0274	0.112
TCHL (ng/mL)	130	20	15%	0.00500	NC	NC	<LOD	<LOD	<LOD	<LOD	<LOD	0.00615	0.0344
TNON (ng/mL)	130	123	95%	0.00500	0.0275	2.58	<LOD	0.00708	0.0120	0.0225	0.0520	0.0801	0.362

2 - Summary Table of HHEAR QC Pools:

A) HHEAR QC Pools Summary Table (Overall) – – Four 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 (%)
BHCH (ng/mL)	**H-A**	0.0025	4	4	100	0.0167	25
	H-B	0.0025	4	0	0	NC	NC
HCB (ng/mL)	**H-A**	0.0025	4	4	100	0.0200	34
	H-B	0.0025	4	1	25	0.00373	NC
OCHL (ng/mL)	**H-A**	0.0050	4	4	100	0.0382	21
	H-B	0.0050	4	0	0	NC	NC
PPDDD (ng/mL)	**H-A**	0.0025	4	1	25	0.00387	NC
	H-B	0.0025	4	0	0	NC	NC
PPDDE (ng/mL)	**H-A**	0.0050	4	4	100	0.958	3
	H-B	0.0050	4	4	100	0.0616	19
PPDDT (ng/mL)	**H-A**	0.0025	4	1	25	0.00425	NC
	H-B	0.0025	4	0	0	NC	NC
TCHL (ng/mL)	**H-A**	0.0050	4	1	25	0.00696	NC
	H-B	0.0050	4	0	0	NC	NC
TNON (ng/mL)	**H-A**	0.0050	4	4	100	0.0820	20
	H-B	0.0050	4	0	0	NC	NC

References:

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3. Kannan, K., et al., *Quality assurance and harmonization for targeted biomonitoring measurements of environmental organic chemicals across the Children's Health Exposure Analysis Resource laboratory network.* International Journal of Hygiene and Environmental Health, 2021. 234: p. 113741.
4. Protection, N.J.D.o.E., *Data Quality Assessment and Data Usability Evaluation Technical Guidance.* 2014(Version 1.0): p. 1-132.
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