

DTSC Laboratory Update



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Report to Scientific Guidance Panel - Excerpts
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CA Teachers Study

- **In collaboration with:**
 - Cancer Prevention Institute of California, UCI, USC, City of Hope**
- **Sub-study funded by CA Breast Cancer Research Program**
- **Blood samples from ~1,000 cases and 1,000 controls from entire State**
- **Recruitment and sample collection: 2011-2013**
- **Analysis of PCBs, PBDEs, PFCs, thyroid hormones, lipids**

Progress with the CA Teachers Study (CTS)

	n=1,763 received		
	PFC	PCB/OCP	PBDE
Extraction completed	857	632	632
Instrument Analysis Completed	614	141	462
Data Review Completed	614	0	400
Data Released to PI	614	0	323

Age and Race Distribution for 614 CTS Participants with PFC results

Race	n	%
White	395	64.3
Black	55	9.0
Hispanic	83	13.5
Asian/PI	73	11.9
Other	8	1.3
Total	614	100

Age at Blood Draw (Years)	n	%
40-49	35	5.7
50-59	93	15.2
60-69	211	34.4
70-79	177	28.8
80-89	87	14.2
90-99	11	1.8
Total	614	100

PFCs (ng/mL) in Serum Samples of 614 Women CTS Subset, 2011-12 (results as of 4/1/2013)

Perfluorochemicals (PFCs)	Geometric Mean (95% Confidence Interval)	Selected Percentiles			
		25 th	50 th	75 th	95 th
PFHpA	0.07 (0.07 – 0.08)	< <i>LOD</i>	0.07	0.13	0.27
PFOA	2.52 (2.40 – 2.64)	1.79	2.52	3.68	6.18
PFNA	1.00 (0.95 – 1.04)	0.72	0.99	1.40	2.38
PFDeA	0.22 (0.20 – 0.23)	0.16	0.24	0.36	0.68
PFUA	0.14 (0.13 – 0.15)	0.09	0.15	0.24	0.44
PFDoA	*	< <i>LOD</i>	< <i>LOD</i>	< <i>LOD</i>	0.07
PFBuS	*	< <i>LOD</i>	< <i>LOD</i>	< <i>LOD</i>	0.07
PFHxS	1.61 (1.51 – 1.72)	1.05	1.57	2.41	6.23
PFOS	7.07 (6.66 – 7.51)	4.86	7.59	11.1	20.8
PFOSA	0.05 (0.04 – 0.05)	0.02	0.05	0.11	0.33
Et-PFOSA-AcOH	0.04 (0.04 – 0.05)	0.02	0.04	0.08	0.26
Me-PFOSA-AcOH	0.26 (0.24 – 0.28)	0.13	0.22	0.47	1.61

* Geometric mean was not calculated for chemicals that were found in less than 65% of the study group.
< *LOD* means below limit of detection.

PFCs (ng/mL) in Serum Samples of 614 Women CTS Subset, 2011-12 compared to NHANES, 2009-10

Perfluorochemicals (PFCs)	Geometric Mean (95% Confidence Interval)	NHANES 09-10 (n=674) <i>Women 40 years and above</i>
PFHpA	0.07 (0.07 – 0.08)	*
PFOA	2.52 (2.40 – 2.64)	3.02 (2.75 – 3.32)
PFNA	1.00 (0.95 – 1.04)	1.62 (1.41 – 1.87)
PFDeA	0.22 (0.20 – 0.23)	0.30 (0.27 – 0.32)
PFUA	0.14 (0.13 – 0.15)	0.20 (0.17 – 0.23)
PFDoA	*	*
PFBuS	*	*
PFHxS	1.61 (1.51 – 1.72)	1.47 (1.31 – 1.64)
PFOS	7.07 (6.66 – 7.51)	9.37 (8.17 – 10.76)
PFOSA	0.05 (0.04 – 0.05)	*
Et-PFOSA-AcOH	0.04 (0.04 – 0.05)	*
Me-PFOSA-AcOH	0.26 (0.24 – 0.28)	0.21 (0.19 – 0.24)

* Geometric mean was not calculated for chemicals that were found in less than 65% of the study group.

NHANES is the National Health and Nutrition Examination Survey.

PFCs in Serum Samples of 614 Women

CTS Subset, 2011-12 (results as of 4/1/2013) *continued*

Perfluorochemicals (PFCs)	Detection Frequency	Limit of Detection (ng/mL)
PFHpA	73.5 %	0.059
PFOA	99.8 %	0.029
PFNA	100 %	0.014
PFDeA	93.2 %	0.032
PFUA	98.4 %	0.010
PFDoA	13.7 %	0.036
PFBuS	18.4 %	0.022
PFHxS	100 %	0.012
PFOS	99.7 %	0.083
PFOSA	90.6 %	0.008
Et-PFOSA-AcOH	88.1 %	0.011
Me-PFOSA-AcOH	99.8 %	0.013

Age and Race Distribution for 323 CTS Participants with PBDE results

Race	n	%
White	240	74.3
Black	29	9.0
Hispanic	25	7.7
Asian/PI	23	7.1
Other	6	1.9
Total	323	100

Age at Blood Draw (Years)	n	%
40-49	17	5.3
50-59	40	12.4
60-69	104	32.2
70-79	102	31.6
80-89	50	15.5
90-99	10	3.1
Total	323	100

Lipid-Adjusted PBDEs (ng/g) in Serum Samples of 323 Women CTS Subset, 2011-12 (results as of 4/1/2013)

Polybrominated Diphenyl Ethers (PBDEs)	Geometric Mean (95% Confidence Interval)	Selected Percentiles			
		25 th	50 th	75 th	95 th
BDE 28	*	< LOD	< LOD	1.89	4.13
BDE 47	13.61 (12.35 – 15.00)	7.67	13.2	23.8	65.7
BDE 99	*	< LOD	< LOD	4.88	13.4
BDE 100	1.96 (1.76 – 2.19)	0.99	1.96	3.79	9.66
BDE 153	5.02 (4.45 – 5.66)	2.53	4.77	8.76	44.4

* Geometric mean was not calculated for chemicals that were found in less than 65% of the study group.
< LOD means below limit of detection.

Lipid-Adjusted PBDEs (ng/g) in Serum Samples of 323 Women CTS Subset, 2011-12, compared to NHANES, 2003-04

Polybrominated Diphenyl Ethers (PBDEs)	Geometric Mean (95% Confidence Interval)	NHANES 03-04 (n=471) <i>Women 40 years and above</i>
BDE 28	*	1.15 (0.96 – 1.38) [†]
BDE 47	13.61 (12.35 – 15.00)	17.34 (14.16 – 21.24) [†]
BDE 99	*	*
BDE 100	1.96 (1.76 – 2.19)	3.22 (2.70 – 3.85)
BDE 153	5.02 (4.45 – 5.66)	3.90 (3.39 – 4.98)

† BDE 28: n=462
BDE 47: n=464

* Geometric mean was not calculated for chemicals that were found in less than 65% of the study group.

NHANES is the National Health and Nutrition Examination Survey.

Lipid-Adjusted PBDEs in Serum Samples of 323 Women

CTS Subset, 2011-12 (results as of 4/1/2013) *continued*

Polybrominated Diphenyl Ethers (PBDEs)	Detection Frequency	Limit of Detection	
		Wet wt. (ng/mL)	Lipid wt. (Range, ng/g)
BDE 28	43.7%	0.009	0.62 – 1.36
BDE 47	92.3%	0.024	1.94 – 3.54
BDE 99	31.9%	0.025	1.74 – 3.78
BDE 100	85.4%	0.004	0.30 – 0.57
BDE 153	86.7%	0.009	0.74 – 1.35