

Report to Scientific Guidance Panel



Program Update Environmental Health Laboratory

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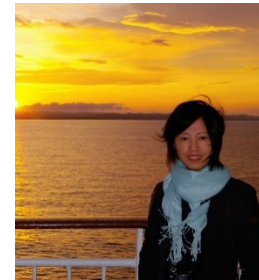
Overview

- Staff changes**
- Method updates**
- Completed testing**
- Ongoing projects**
- Recent publications**
- Future/pending work**

Staff Changes

Visiting Scholars

- Mr. YiFu Lu
- Dr. YiFei Sun
- Dr. Chunhua Wu



Recent staff departures

- Dr. Rana Zahedi
- Dr. Yu-Chen Chang

Method Updates

- Cotinine in Serum**
- Expanded environmental phenols panel**
- New instrument for metal analysis**

Cotinine in Serum

Analyte	EHL LOD ng/mL	Geometric Mean	95 th Percentile
Cotinine	0.015	0.041*	1.29*

**Fourth National Report on Human Exposure to Environmental Chemicals, 2009. Updated Tables, January 2017. Males, Survey Years 11-12.*

Environmental Phenols in Urine

□ Expanded panel

- **BPF, BPS, Triclocarban**

Analyte	EHL LOD (ng/mL)	Geometric Mean (ng/mL)	95 th Percentile
BPF*	0.2	<i>0.15 – 0.54</i>	6.9 – 9.1
BPS*	0.1	<i>NC – 0.25</i>	0.3 – 1.8
Triclocarban **	0.1	<i>0.397</i>	13.4

* *XiaoYun Ye et al, ES&T, 2015, 49, 11834 - 11839*

***Fourth National Report on Human Exposure to Environmental Chemicals, 2009 Updated Tables, January 2017. Non-Hispanic blacks, Survey years 13-14*

Metals in Urine

☐ New Agilent 8900 ICP-MS

- Allows for simultaneous analyses of blood (7700) & urine specimens (8900)
- Improved LODs for some metals in urine

	Cr	Mn	Co	As	Se	Sr	Mo	Cd	Sb	Hg	Tl	Pb	U
7700	0.50	0.30	0.03	0.10	0.50	1.00	0.10	0.03	0.05	0.05	0.03	0.10	0.01
8900	0.50	0.10	0.01	0.10	0.10	0.30	0.10	0.01	0.03	0.01	0.01	0.10	0.01

Units in µg/L

Completed Testing

STUDY	PANEL	ANALYTES
Firefighter Occupational Exposures (FOX) Project	Organophosphate flame retardants in urine	BCEP, BDCPP & DPP (<i>n</i> = 83)
Expanded Biomonitoring Exposure Study (EBEST)	Perchlorate in urine	Perchlorate (<i>n</i> =218)
Stanford University Maternal Serum Study (SUMS)	Metals in serum	Cd, Hg, Se (<i>n</i> = 102)

Completed Testing (cont.)

STUDY	PANEL	ANALYTES
Asian/Pacific Islander Community Exposures (ACE) Project (II)	Trace metals in blood	Pb, Cd & Hg (<i>n</i> =99)
	Trace metals in urine	As, Cd & Hg; Creatinine (<i>n</i> =100)
	As speciation in urine	As III, As V, AsB, AsC, DMA, MMA (<i>n</i> =72)

Ongoing Projects

- Northern California Firefighter Study**
- East Bay Diesel Exposure Project**
- California Regional Exposure (CARE) Study**

No. Cal. Firefighter Study

- ❑ Collected 180 firefighter samples involved in the Napa/Sonoma fires of 2017 to determine metal exposures
 - Blood metals: Cd, Mn, Hg & Pb
 - Urine metals: Cd, Mn, Hg & Sb
 - Creatinine

East Bay Diesel Exposure Project



- Collection of urine samples from 50 child-parent pairs underway (260 samples)

- EHL will:
 - Aliquot urine samples
 - Measure creatinine and specific gravity
 - Ship samples to UW for 1-nitropyrene metabolite analysis

CARE LA

- ❑ Collection of blood, urine, and serum samples underway (~300-500 participants)
- ❑ In-house testing for
 - Blood metals: Cd, Mn, Hg & Pb
 - Urine metals: Cd, Mn, Hg, Sb, As, Co, Mo & U
 - Creatinine & specific gravity
- ❑ Preparations: Setup new sample management laboratory; new bar-code reader system

Recent Publications

Berger KP, Kogut KR, Bradman A, She J, Gavin Q, Zahedi R, Parra KL, Harley KG (2018). Personal care product use as a predictor of urinary concentrations of certain phthalates, parabens, and phenols in the HERMOSA study. **J Expo Sci & Environ Epi.**

Behniwal PK, She J (2017). Development of HPLC-MS/MS method for the simultaneous determination of metabolites of organophosphate pesticides, synthetic pyrethroids, herbicides and DEET in human urine. **Intl J Environ Anal Chem.**

Lu D, Jin Y, Feng C, Wang D, Lin Y, Qiu X, Xu Q, Wen Y, She J, Wang G, Zhou Z (2017). Multi-analyte method development for analysis of brominated flame retardants (BFRs) and PBDE metabolites in human serum. **Anal Bioanal Chem.**

Luderer U, Christensen F, Johnson WO, She J, Ip HSS, Zhou J, Alvaran J, Krieg EF Jr, Kesner JS (2017). Associations between urinary biomarkers of polycyclic aromatic hydrocarbon exposure and reproductive function during menstrual cycles in women. **Environment International.**

Yu N, Shu S, Lin Y, She J, Ip HSS, Qiu X, Zhu Y (2017). High efficiency cabin air filter in vehicles reduces drivers' roadway particulate matter exposures and associated lipid peroxidation. **Plos One.**

Future Work

- ❑ Maternal Cotinine and Autism (MACOTA) Study
 - ❑ Cotinine analysis in relation to the occurrence of Autism Spectrum Disorder (collaboration)
- ❑ CARE Study Subsets
 - ❑ Measure selected panels on subsets of CARE participants (phenols and pesticides ...)

Activities Lost and At Risk

July 2017 – *Lost two positions (limited term position ended)*

↓ PAH, ↓ Non-targeted screening

July 2018 – *Will lose one position (limited fund ending)*

↓ Phthalate, ↓ Perchlorate

Temporary fix– *Visiting Scholars*

↑ PAH, ↑ Non-targeted screening

Questions