

# Report to Scientific Guidance Panel



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# Overview

- **Method Updates**
  - OP Flame Retardants
  - BPA Analogs
- **Ongoing Projects**
- **Future Work**

# Method Updates: Background

- **OP Flame Retardants**
  - Analytes: DPP, BECP, BCPP & BDCPP
- **BPA Analogs**
  - Analytes: BPS, BPB, BPF & BPAF

# Method Update: OP Flame Retardants

- **Precision and Accuracy Data:** 6 replicates measured for each Quality Control (QC) level. Collections taken within a single analytical run (i.e., within-run precision).

URINARY METABOLITES	QCL: 1 ppb (CV %)	QCH: 10 ppb (CV %)	QCL: 1 ppb (Recovery %)	QCH: 10 ppb (Recovery %)
<b>DPP</b> Diphenyl phosphate	14.3%	1.8 %	104%	113%
<b>BCEP</b> Bis(2-chloroethyl) phosphate	14.2 %	7.7 %	89%	88%
<b>BCPP</b> Bis(2-chloroisopropyl) phosphate	17.5 %	12.1 %	113%	89%
<b>BDCPP</b> Bis(1,3-dichloro-2-propyl) phosphate	15.0 %	7.8 %	94%	100%

# Method Update: BPA Analogs

- **Precision and Accuracy Data:** 15 replicates measured for each QC level. Collections taken over 4 days.

COMPOUNDS	QCL: 1 ppb (CV %)	QCH: 10 ppb (CV %)	QCL: 1 ppb (Recovery %)	QCH: 10 ppb (Recovery %)
<b>BPS</b> Bisphenol S	28.0 %	26.9 %	97 %	99 %
<b>BPB</b> Bisphenol B	7.5 %	11.2 %	107 %	100 %
<b>BPF</b> Bisphenol F	7.5 %	7.2 %	102 %	110 %
<b>BPAF</b> Bisphenol AF	9.5 %	15.3 %	99 %	105 %

# Current EHL Capabilities

Class	# of analytes	Sample type	Instrumentation	Status
1. Metals panel	13	Whole blood	ICP-MS	Production
2. Metals panel	13	Serum/plasma	ICP-MS	Production
3. Metals panel	13	Urine	ICP-MS	Production
4. PCBs, PBDEs	12	Dried blood spots	HRGC-MS	Production
5. Perchlorate	1	Urine	IC-MS/MS	Production
6. Arsenic speciation	6	Urine	LC-ICP-MS	Production
7. OP specific, pyrethroid & herbicide metabolites	9	Urine	LC-MS/MS	Production
8. OP flame retardants	4	Urine	LC-MS/MS	Validation
9. Environmental phenols	13	Urine	LC-MS/MS	Production
10. BPA analogs	5	Urine	LC-MS/MS	Validation
11. Phthalates	10	Urine	LC-MS/MS	Production
12. PAHs	9	Urine	HRGC-HRMS	Production
13. DAPs	5	Urine	GC-MS/MS	Production
14. Creatinine	1	Urine	Spectrophotometer	Production

# Expanded BEST Update

ANALYSES PENDING	*DATA UNDER REVIEW	DATA RELEASED TO PROGRAM
<ul style="list-style-type: none"><li><input type="checkbox"/> Arsenic speciation in urine</li><li><input type="checkbox"/> Perchlorate in urine</li></ul>	<ul style="list-style-type: none"><li><input type="checkbox"/> Environmental phenols in urine</li><li><input type="checkbox"/> Phthalates in urine</li></ul> <p><i>*To be released by end of April</i></p>	<ul style="list-style-type: none"><li>✓ Blood total metals</li><li>✓ Urine total metals</li><li>✓ Creatinine in urine</li><li>✓ OH-PAHs in urine</li><li>✓ OP specific metabolites, pyrethroids &amp; herbicides in urine</li></ul>

# Ongoing Projects

STUDY	COLLABORATORS	ANALYSES/ SAMPLE #	STATUS
Community Health Impacts from Mining Exposures ( <b>CHIME</b> )	Cancer Prevention Institute of California ( <i>Peggy Reynolds, PhD, MPH</i> ) Sierra Streams Institute ( <i>Joanne Hild, MS</i> )	11 metals & creatinine in urine n=60	Preliminary data reported
Pregnancy Environment & Lifestyle Study ( <b>PETALS</b> )	Kaiser Permanente Northern California ( <i>Assiamira Ferrara, MD, PhD</i> )	BPA, BP-3, triclosan & creatinine in urine n=600/yr (3 yrs)	<ul style="list-style-type: none"> <li>138 samples received</li> <li>All analyses completed</li> <li>Preliminary data reported for n=60</li> </ul>



# Ongoing Projects (cont.)

STUDY	ANALYSES/SAMPLE #	STATUS
Measuring Analytes in Maternal Archived Samples (MAMAS)	13 metals in serum n=200	Preliminary data reported for n=100

# Recent Publications

- Determination of ultra-trace elements in human plasma or serum by ICP-MS using sodium in the presence of carbon as a single calibration matrix-match component

Gajek R and Choe KY, 2015

**Journal of Analytical Atomic Spectrometry** DOI: 10.1039/c5ja00011d

- Development and validation of a simple and robust method for As speciation in human urine using HPLC/ICP-MS

Sen I, Zou W, Alvaran J, Nguyen, L, Gajek R, and She J, 2015

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# Future work

- Continue targeted unknown screening method development
- Advance BPAA and OP flame retardants methods into production
- Complete reporting of ongoing projects; prepare for next round of PETALS samples