

CDPH Laboratory Update



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Environmental Health Laboratory

Report to Scientific Guidance Panel

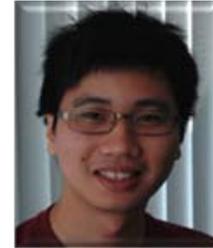
Sacramento, CA

November 10, 2011

Staff Changes

- NEW Staff

Laboratory Assistant - Anthony Zhou



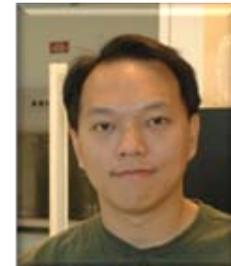
America Public Health Laboratory fellow - Simon Ip, Ph.D.

- Vacancy

Research Scientist Supervisor I

Research Scientist II

Sample Management Specialist



Laboratory Set-up

- Purchased and installed a LC-MS/MS for perchlorate and organophosphate pesticides



- This purchase completed EHL's laboratory set-up for quantitative analyses funded by CDC cooperative agreement

Methods



- Under development



- Under validation



- In production



Under Development

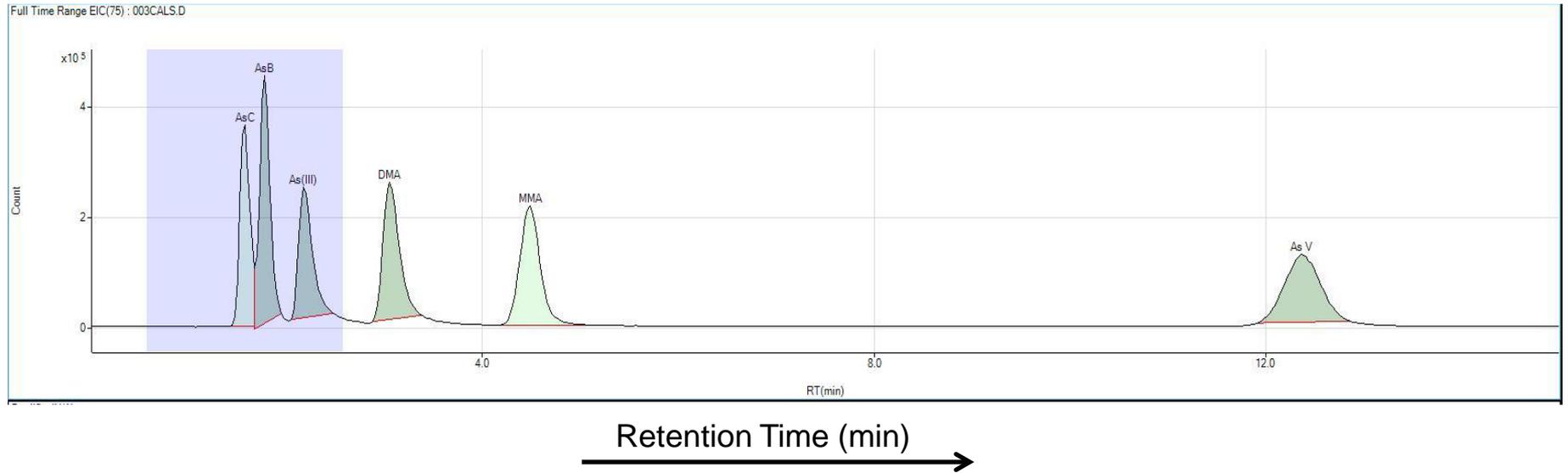
- Metal panel in urine by ICP-MS
- Perchlorate



Under Validation

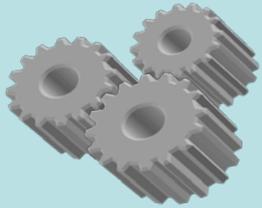
- PBDEs and PCBs in dried blood spots and low volume blood by GC-HRMS
- Arsenic speciation in urine by LC-MS

Arsenic Speciation



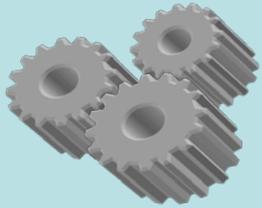
	Retention Time(min)	Detection Limit (ppb)
1. Arsenocholine (Asc)	1.6	0.12
2. Arsenobetaine (Asb)	1.8	0.22
3. As-III	2.1	0.15
4. DMA	2.9	0.20
5. MMA	4.2	0.19
6. As-V	11.8	0.29

DMA: Dimethylarsinic Acid
MMA: Monomethylarsonic Acid



In Production

- Metals in blood
 - Hg, Cd, Pb, Mn
- Phthalate metabolites
 - mEP, mBP, mBzP, mCPP, mECP and mCHP
- Common metabolites of organophosphate pesticides - DAPs
 - DMTP, DMDTP, DEP, DETP, DEDTP
- Specific metabolites of organophosphate pesticides
 - TCPy, 3-PBA
- Environmental phenols
 - Thirteen phenols
- Hydroxy PAHs
 - Ten mono hydroxy PAHs



Sample Analysis Status

Analysis	Completed # of MIEEP Samples Analysis	# of FOX Samples For Analysis
Metals (Blood)	140	101
DAPs (Urine)	90 (+ 5 blanks)	101
Specific Metabolites of OP pesticides (Urine)	90 (+ 5 blanks)	101
Environmental Phenols (Urine)	90 (+ 5 blanks)	101
Hydroxy PAHs (Urine)	90 (+ 5 blanks)	101

Future Work

- Finish FOX sample analysis
- Complete method validation
 - Dry blood spot for PBDEs and PCBs;
 - Metal panel in urine
 - Arsenic speciation
- Develop analytical method for perchlorate
- Expand analyte list
 - Organophosphate and pyrethroids pesticides
- Automate sample preparation
- Develop Data review checklist

Organophosphate and pyrethroid pesticides

Expand list

Parent Compound	Metabolite	Abbreviation
DEET	N,N-Dimethyl-M- Toulamide	DEET
Diazinon	2-Isopropyl-6-methyl-4-pyrimidinol	Oxypyrimidine/IMPY
2,4,5-T	2,4,5-Trichlorophenoxyacetic Acid	TCPAA
Permethrin, cypermithin	DCCA	DCCA
Cyfluthrin	4-Fluoro-3-phenoxybenzoic Acid	FPBA
2,4-D	2,4-Dichlorophenoxyacetic Acid	DCPAA
Atrazine	Atrazine mercapturate	ATZ
Parathion, methylparathion	4-nitrophenol	PNP
Chlorpyrifos	3,5,6-Trichloro-2-pyridinol	TCPy
Permethrin, cypermethrin, cyfluthrin, others	3-phenoxybenzoic acid	3-PBA

Data Review Check list

Calibration curve and recovery

- Check the variation of the calibration curve; R, slope and intercept
- Construct calibration curve control chart: for slope and intercept
- Do a metric plot of the internal standard or calculate the recovery of internal standard, if possible
- Construct control chart for the recovery of the target

Chromatograph

- Check integration for each peak: retention time; peak shape and width of the peak
- Check the confirmation ion to confirm the ratio between confirmation and quantitation transition
- Check relative retention time between target peak and IS peak



Thank You !