CDPH Laboratory Update

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Environmental Health Laboratory

Report to Scientific Guidance Panel

Oakland, CA

July 26, 2012

Staff Changes

New Staff

- John Chen - Laboratory Information Management System (LIMS) Specialist

Vacancies

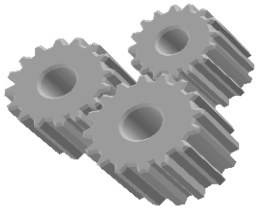
- 2 - Environmental Laboratory Scientist positions

  -Actively recruiting

Farewell & Thanks to:

Dr. DongLi Wang

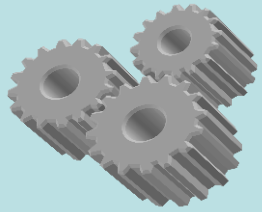
Methods



- In production

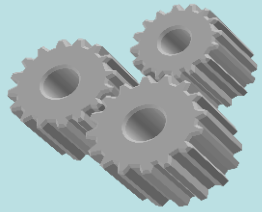
- Under validation

- Under development



Methods In Production

- **Metals in blood**
  - Hg, Cd, Pb, Mn
- **Creatinine**
- **Phthalate metabolites**
  - mEP, mBP, mBzP, mCPP, mECPP, mCHP
- **DAPs - dialkyl phosphate metabolites of organophosphorus pesticides**
  - DMTP, DMDTP, DEP, DEDTP
- **OP specific metabolites, pyrethroids & herbicides**
  - TCPy, 3-PBA **+ 6 others**
- **Environmental phenols**
  - BPA, Triclosan, benzophenone-3, O-phenyl phenol, 4-tert-Octyl phenol methyl-paraben, ethyl-paraben, propyl-paraben, butyl-paraben
- **Hydroxy PAHs**
  - 1-NAP, 2-NAP, 2-FLUO, 3-FLUO, 9-FLUO, 1-PHEN, 2-PHEN, 3-PHEN, 1-PYR

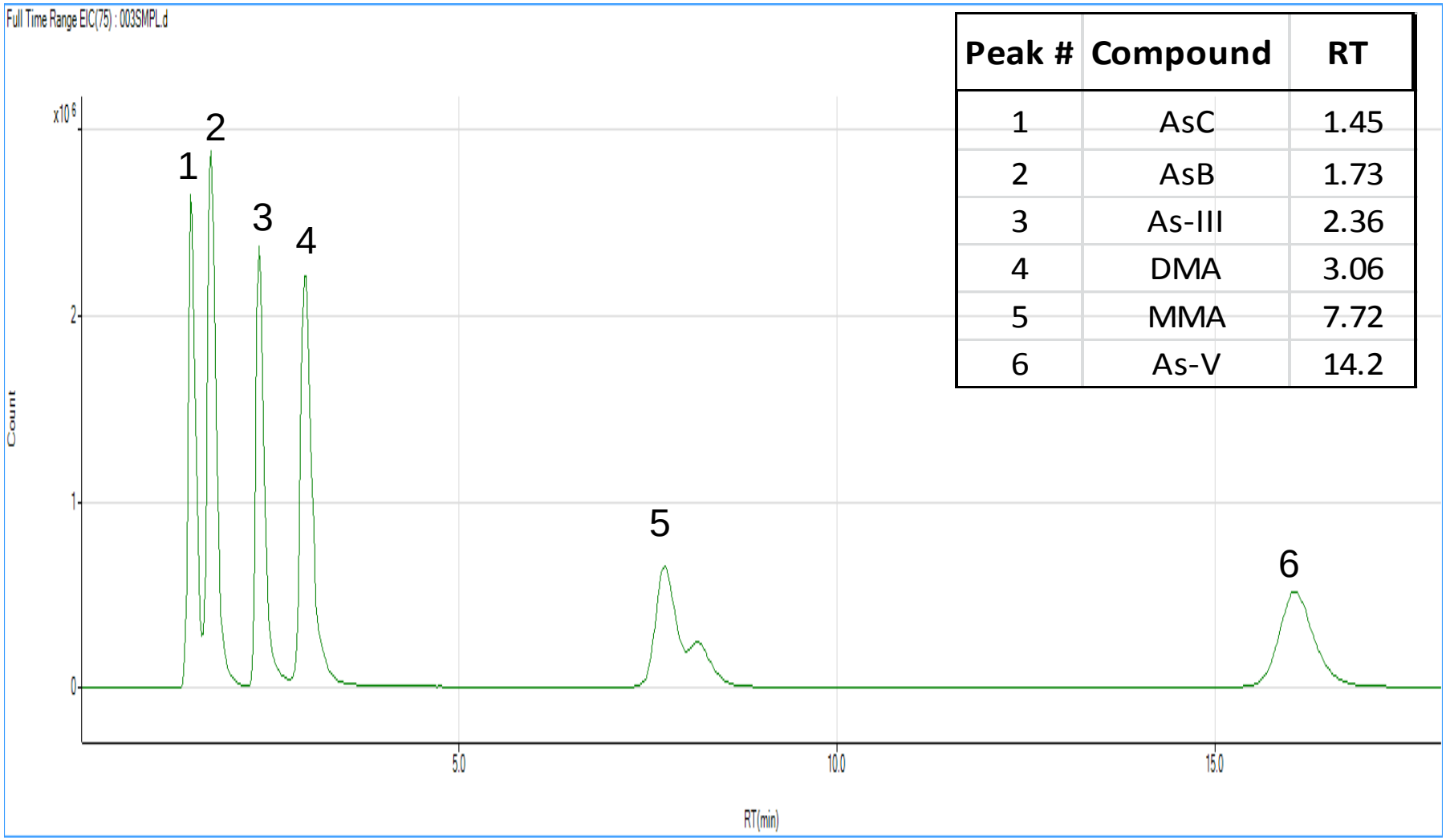


OP Specific Metabolites, Pyrethroids & Herbicides

- EHLB method captures all listed analytes
  - **TCPy (trichloropyridinol)** - metabolite of chlorpyrifos*
  - **IMPY (2-isopropyl-4-methylpyridinol)** - metabolite of diazinon*
  - **3-PBA** and **DCCA** - metabolites of permethin* & cypermethrin*
  - **4F-3-PBA** - metabolite of cyfluthrin*
  - **ATZ (Atrazine mercapturate)** - metabolite of Atrazine
  - **TCPAA (trichlorophenoxyacetic acid)** - metabolite of 2,4,5-T
  - **DCPAA (dichlorophenoxyacetic acid)** - metabolite of 2,4-D*

* Biomonitoring CA priority chemical

Baseline Separation of Arsenobetaine and As-III



Peak #	Compound	RT
1	AsC	1.45
2	AsB	1.73
3	As-III	2.36
4	DMA	3.06
5	MMA	7.72
6	As-V	14.2

Progress - Metals Panel in Urine

Sample		As (µg/L)	Cd (µg/L)	Hg (µg/L)	Pb (µg/L)
NIST 2668 (Hg NIST 3668) Toxic Elements in Frozen Urine					
Level 1	Target Values (NIST)	10.81	1.056	0.910	1.234
	Reported Results	10.9	1.12	0.833	1.12
Level 2	Target Values (NIST)	213.1	16.4	6.38	137.9
	Reported Results	218	17.3	6.13	125
NY State Dept of Public Health PT					
UE12-01	Target Values (NYS)	180.8	4.2	27.2	32.1
	Reported Results	187	4.28	33.6	32.5
UE12-02	Target Values (NYS)	50.5	7.5	94.1	104.5
	Reported Results	51.9	7.49	89.9	104
UE12-03	Target Values (NYS)	207.7	2.1	77.2	28.7
	Reported Results	212	2.01	92.6	29.0
UE12-04	Target Values (NYS)	30.2	22.5	58.6	53.5
	Reported Results	31.2	23.4	60.3	53.4
UE12-05	Target Values (NYS)	67.6	11.5	118.5	161.5
	Reported Results	71.2	11.7	119	164
INSPQ (Quebec) PT					
QM-U-Q1202	Target Values (INSPQ)	46.23	8.80	51.96	116.45
	Reported Results	47.5	9.00	55.6	117

Under Development

- Perchlorate method
- Improving data review procedures
- Automation of sample preparation

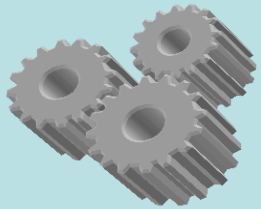
Perchlorate Method IDC

Initial Demonstration of Capability

QCs/SRMs	Expected Value (ng/mL)	Average Measured Value (ng/mL)	Precision (%RSD)	Number of Replicates
QC- Low	0.75	0.75	3.7	14
QC-Med	5.0	5.2	3.6	14
QC- High	37.5	37.9	3.8	14
NIST 3668-I	2.70 +/- 0.21	2.73	3.9	10
NIST 3668-II	13.47 +/- 0.96	14.4	4.1	10

Data Review Process

1. **Peer review**. Checklist: calibration curves, chromatographic peaks, integrations, and manual check of calculations.
2. **QA review**. Checklist: SOP criteria for results, QC sample performance, duplicate recoveries/RPD's, STARLIMS results entry and preparation of final data report for supervisor.
3. **Supervisor review**. Checklist: confirms checklists from peer review/QA review and STARLIMS data submitted to EHIB.
4. **Complete data package** for each run batch includes: a project tracking sheet, raw data & calibration curves, signed checklists from peer and QA review, QA summary of package review and data report.



Sample Analyses Status

March 2012 - July 2012

Method	MIEEP	FOX	Pilot BEST
Metals (blood)	Completed	Completed	Completed
DAPs (urine)	Under QA Review	Analysis in Progress	109 Samples Awaiting
OP Specific Metabolites, Pyrethroids & Herbicides (urine)	Completed	Under Peer Review	109 Samples Awaiting
Environmental Phenols (urine)	Completed	Under Peer Review	109 Samples Awaiting
Hydroxy PAHs (urine)	Under QA Review	Under Peer Review	109 Samples Awaiting

Sample Analyses Status

March 2012 - July 2012

Method	MIEEP	FOX	Pilot BEST
Phthalates (urine)	Completed	Under Peer Review	109 Samples Awaiting
Creatinine (urine)	Completed	Completed	109 Samples Awaiting
Metals & Arsenic Speciation (urine)	89 Samples Awaiting	101 Samples Awaiting	109 Samples Awaiting
Perchlorate (urine)	89 Samples Awaiting	n/a	n/a

Proficiency Testing & Inter-lab QA/QC Program

Results from German PT Program Round 49

Parameter	EHLB value A	G-EQUAS reference value A	G-EQUAS tolerance range-value A	EHLB value B	G-EQUAS reference value B	G-EQUAS tolerance range-value B	unit
3-PBA	1.92	2.055	1.383 - 2.727	4.08	4.024	3.034 - 5.014	µg/L
Bisphenol A	3.30	2.52	1.53 - 3.51	6.32	5.38	3.70 - 7.06	µg/L
MBzP	3.60	3.4	2.5 - 4.3	26.8	24.4	20.8 - 28.0	µg/L
MnBP	17.7	21.7	10.9 - 32.5	105.0	131.3	97.7 - 164.9	µg/L
1-Naphthol	20.0	17.41	13.27 - 21.55	42.2	35.61	28.44 - 42.78	µg/L
2-Naphthol	10.1	10.23	7.44 - 13.02	29.7	28.93	23.20 - 34.66	µg/L

Awaiting Results from CDC PT Program:

- Arsenic speciation
- OP specific metabolites, pyrethroids & herbicides
- Phthalates metabolites
- Hydroxy PAHs
- Environmental phenols

Future Work

- Complete MIEEP data review
- Finish FOX analyses and data review
- Analyze Pilot BEST and RFI samples
- Complete method validation
  - Metals panel in urine
  - Arsenic speciation
  - Perchlorate
- Automate sample preparation and data review process
- Cross-train employees

Questions?