

Scientific Guidance Panel Report:

Environmental Health Laboratory Progress Report

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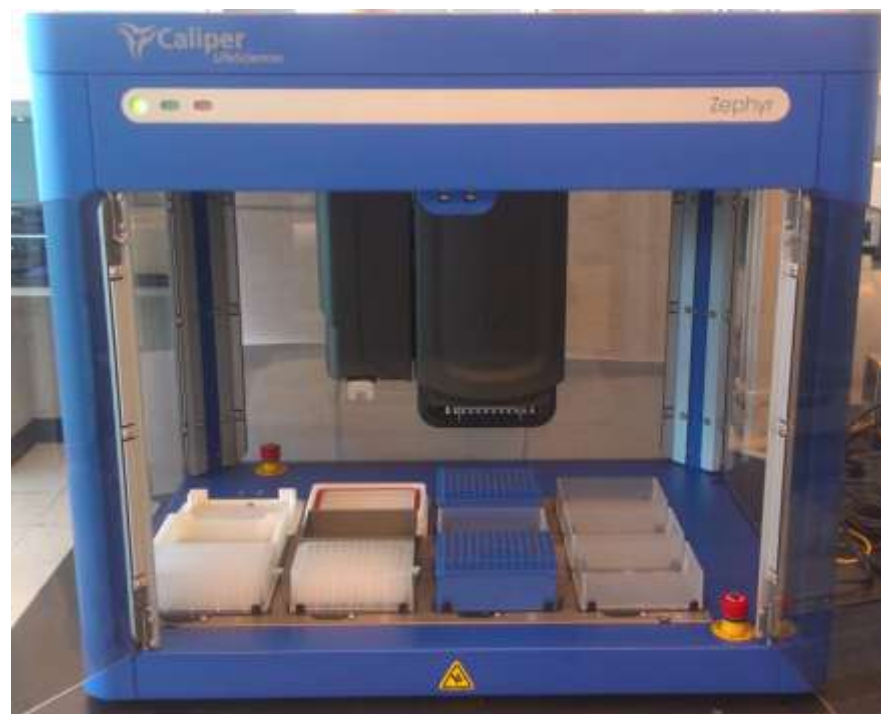
Staff Changes



- Laboratory Interns
 - Anthony Zhou
 - Austin L. Long
 - Jonathan R. Li
 - Sherry Wang
- Retirement of Dr. Frank Barley
- Departure of Fogarty Fellow Dasheng Lu

Laboratory Set up

- Plan to purchase LC-MS/MS
 - Evaluating three options
- Installed a Zephyr solid-phase extraction (SPE) workstation
 - To automate sample preparation
 - Improve precision



Methods



- Under development



- Under validation



- In production



Under Development

- Metal panel in urine by ICP-MS
- As and Hg speciation in urine by LC-MS




Under Validation

- Analytes in dried blood spots (DBS) and dry blood spot volume (DBSV) by GC-HRMS
- Hydroxy-PAHs in urine by GC-HRMS
- Hydroxy-PAHs in urine by LC-MS/MS



DBS and DBSV

- Develop an analytical method for DBS and DBSV with “one drop” blood 
- Improve sample through-put without sample clean up
- Measure chemicals in DBS and DBSV or in samples collected by a less invasive collection means

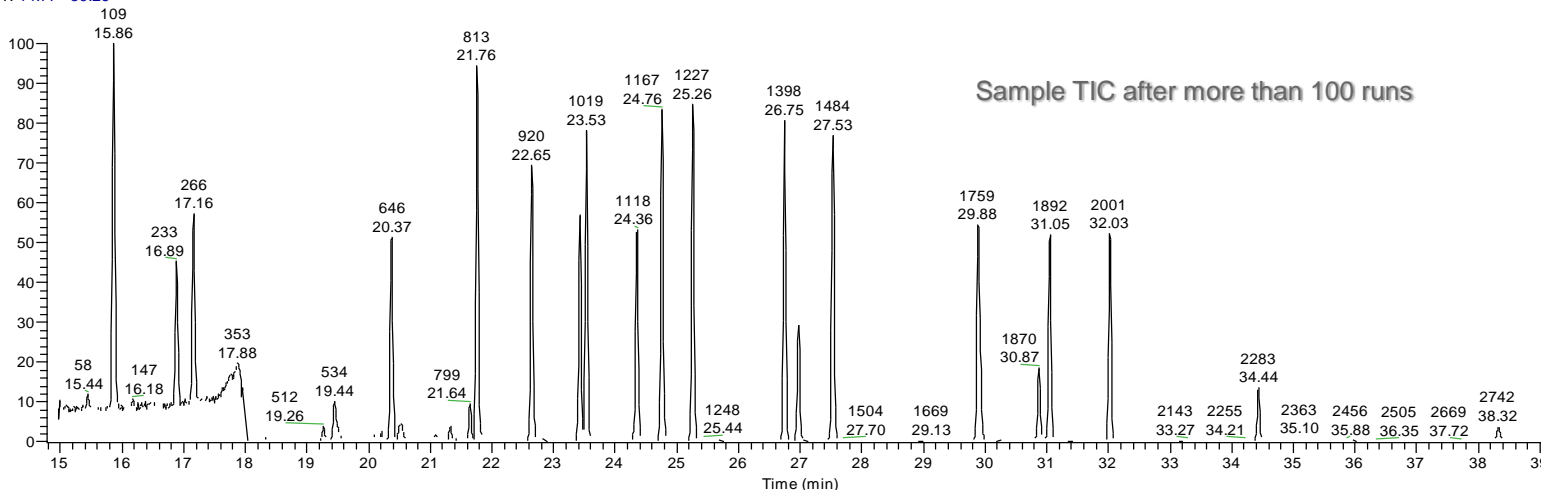


Analytical System Performance

C:\xcalibur\data\PBDEs-PCBs\50311\crm-7

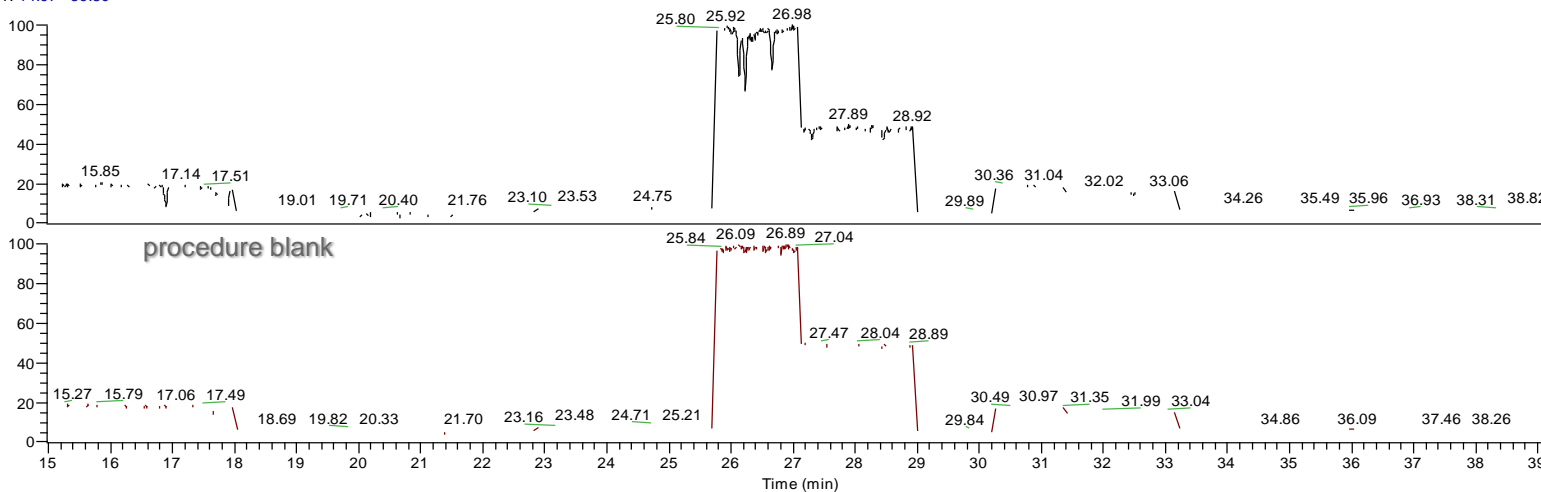
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RT: 14.77 - 39.26



NL:
8.55E4
TIC MS
crm-7

RT: 14.97 - 39.30



NL:
7.35E6
TIC MS
crm-7

NL:
8.84E6
TIC MS
procedure-
blank

Reference and exception peaks



Method Performance

| Congeners | High spiked level (ng/mL) (0.16) (n=8) | | | | Proficiency Test (ng/Kg) (n=2) | |
|-----------|---|-----|-----|-----|-----------------------------------|-----------------|
| | DBSV | | DBS | | DBSV | Certified value |
| | Rec | RSD | Rec | RSD | | |
| CB-28 | 106 | 5 | 105 | 10 | 9 | 9.3±1.2 |
| CB-153 | 119 | 8 | 114 | 10 | 64 | 57±3.3 |
| CB-138 | 125 | 7 | 117 | 8 | 44 | 37±5.4 |
| CB-180 | 115 | 8 | 119 | 17 | 54 | 54±1.3 |
| CB-105 | 123 | 5 | 118 | 10 | 5 | 4.1±3.1 |
| CB-118 | 119 | 5 | 124 | 6 | 13 | 19±2.7 |
| CB-194 | 111 | 7 | 115 | 22 | 12 | 12±0.5 |
| CB-206 | 105 | 9 | 117 | 25 | 9 | 7.51±0.4 |
| BDE-47 | 121 | 13 | 93 | 8 | 286 | 272±14 |
| BDE-100 | 111 | 5 | 115 | 10 | 52 | 51±2.5 |
| BDE-99 | 104 | 5 | 106 | 12 | 71 | 77.8±1.7 |
| BDE-153 | 110 | 8 | 140 | 14 | 59 | 62.1±3 |
| BDE-183 | 109 | 7 | 115 | 14 | 6 | 3.4±2.3 |

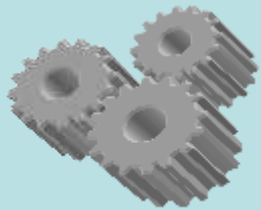


Hydroxy-PAHs by GC-HRMS



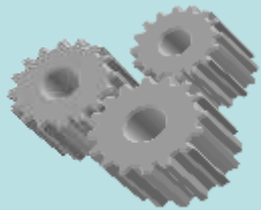
OH-PAH Method Validation - Overall Precision for QC material

| Parent Compound | OH- Metabolite | Concentration pg/ml (ppt) | RSD (%) |
|-----------------|----------------|------------------------------|---------|
| Naphthalene | 1-NAP | 3396 | 5.7 |
| | 2-NAP | 2199 | 24.3 |
| Fluorene | 2-FLUO | 681 | 5.6 |
| | 3-FLUO | 532 | 11.8 |
| | 9-FLUO | 775 | 6.6 |
| Phenanthrene | 1-PHEN | 706 | 6.0 |
| | 2-PHEN | 827 | 12.3 |
| | 3-PHEN | 601 | 3.0 |
| | 4-PHEN | 772 | 10.9 |
| Pyrene | 1-PYR | 573 | 3.3 |



In Production

- Metals in blood
 - Hg, Cd, Pb, Mn
- Phthalate metabolites
 - mEP, mBP
- OP common metabolites - Dialkyl phosphate
 - DMTP, DMDTP, DEP, DETP, DEDTP
- OP specific metabolites
 - TCPy, 3-PBA
- Environmental phenols
 - BPA, Triclosan, BP-3, Butyl paraben, ethyl paraben, propyl paraben, OPP, 4tOP, 2,4-DCP, 2,5-DCP, 2,4,5-TCP, and 2,4,6-TCP
- Creatinine



Sample Analysis Status



| Sample Type | # of MIEEP Samples For Analysis | # of FOX Samples For Analysis | Total Samples | Samples Analyzed |
|-------------------------------|---------------------------------|-------------------------------|---------------|------------------|
| Metals (Blood) | 140 | 101 | 241 | 241 |
| OP Common Metabolites (Urine) | 92 (+ 5 blanks) | 101 | 198 | 50 |
| OP Specific Metabolites | 92 (+ 5 blanks) | 101 | 198 | 90 |
| Environmental Phenols | 92 (+ 5 blanks) | 101 | 198 | 45 |
| Creatinine | 92 (+ 5 blanks) | 101 | 198 | 97 |



Thank You !