Report to Scientific Guidance Panel:

CDPH
Environmental Health Laboratory
Update

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Update Overview

- New staff
- Laboratory set up and instrumentation
- New method development
- Method performance
- Proposed year 2 activities
New Cooperative Agreement Staff

- Dr. Binfeng Xia, Laboratory Scientist
- Dr. Dongli Wang, Laboratory Scientist
- One Laboratory Information Management Specialist to be hired in July 2010

These are in addition to 4 lab staff hired through February 2010 (2 ELS plus QMC and SMS)
Laboratory Set up

• Currently in use:
  – Sample receiving and handling room (D-366)
  – Organics and inorganics analytical lab (D-306)

• Identified for future use:
  – Organics analytical lab (D-263 est. August 2010)
  – Organics analytical lab (D-262 est. Dec 2010)
New Instruments

• Instruments ordered:
  - LC-MS/MS (AB QTRAP 5500): OP specific metabolites and pyrethroid metabolites.
  - LC-MS/MS (Agilent 6460): environmental phenols
  - GC-MS/MS (Agilent 7000): OP common metabolites: dialkyl phosphate (DAPs)

• Still to be purchased:
  - IC-MS/MS: perchlorate
  - Sample preparation equipment: lab automation
## Method Development

<table>
<thead>
<tr>
<th>Validated</th>
<th>In Progress</th>
<th>Exploratory</th>
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<tbody>
<tr>
<td>1. Blood metals (Pb, Cd, Hg, Mn)</td>
<td>1. Metals in urine</td>
<td>1. DAPs</td>
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<tr>
<td>2. Chlorpyrifos (TCPy)</td>
<td>2. Arsenic speciation</td>
<td>2. Perchlorate</td>
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<td>Pyrethroid (3-PBA)</td>
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<td>3. Phthalate (MbP, MeP)</td>
<td>3. Bisphenol – A</td>
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<td>4. PAH (3-Phen)</td>
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<td>5. Creatinine</td>
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Method Precision: 3-Phen

**3-PHEN QC-Low**

- RSD: 5%

**3-PHEN QC-High**

- RSD: 4%
Method Accuracy: Blood Metals

Regression Blood Mercury (Hg), LAMP

\[ y = 1.0334x - 0.9157 \]

\[ R^2 = 0.9971 \]

Regression Blood Cadmium (Cd), LAMP

\[ y = 1.0285x - 0.3665 \]

\[ R^2 = 0.9945 \]
Year 2 Activities

• Expand upon existing methods:
  – Hydroxy-PAH (currently 1 analyte; will increase in Year 2)
  – Phthalate metabolites (currently 2 analytes; will increase in Year 2)
  – OP specific metabolite (currently 1 analyte; will increase in Year 2)

• Methods in progress:
  – Metals in urine (Oct. 2010)
  – Arsenic speciation (June 2011)
  – Bisphenol A (June 2011)

• Increase capacity
  – Procedure automation
  – Enhance throughput