Update on CECBP Activities

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California Environmental Contaminant Biomonitoring Program
Scientific Guidance Panel Meeting
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Sacramento, California
Overview

- Laboratory status
- Status of Request for Information (RFI)
- Environmental Health Tracking collaborations
- Community Study update (after break)
New Laboratory Equipment

- All equipment ordered in 2008 has arrived, installation in progress.

ICP MS

LC tandem MS

Hi Res GC/MS
Increased Throughput (DTSC)

- Installed and tested new automated sample preparation equipment (Liquid Handlers)
- Working with CDC to optimize conditions
- New systems improve accuracy, precision and throughput
Analytical Methods Development

- Much laboratory activity will include new methods development to analyze chemicals in blood and urine, including methods allowing for high throughput
- Chemicals selected for methods development will focus on SGP recommendations for “priority chemicals”
- However, some methods to be used in CECBP labs may be developed for related programs
New Methods Developed (DTSC)

- New Brominated Flame Retardants
  - 1,2-Bis(2,4,6-tribromophenoxy)ethane (BTBPE)
  - 1,2-Dibromo-4-(1,2-dibromoethyl)cyclohexane (TBECH)
  - 2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate (TBB)
  - Hexabromocyclododecane (HBCD)
  - Pentabromoethylbenzene (PBEB)
  - 2,3-Dibromopropyl-2,4,6-tribromophenyl ether (DPTE)
  - Hexabromobenzene (HBB)
  - Pentabromotoluene (PBT)
  - Tetrabromobisphenol A (TBBPA)
  - Decabromodiphenylethane (DBDPE)
  - Bis(2-ethyl-1-hexyl) tetrabromophthalate (TBPH)
New Methods Developed (DTSC)

• Hydroxy metabolites of:
  - PCBs
    - 4-OH-CB107
    - 3-OH-CB153
    - 4-OH-CB146
    - 3'-OH-CB138
    - 4'-OH-CB130
    - 4-OH-CB187
    - 3'-OH-CB180
    - 4'-OH-CB172
    - 4-OH-CB193
  - PBDEs
    - 2'-OH-BDE68
    - 6-OH-BDE47
    - 5'-OH-BDE47
    - 4'-OH-BDE49
    - 5'-OH-BDE100
    - 4'-OH-BDE103
    - 5'-OH-BDE99
    - 4'-OH-BDE101

• Phenols
  - Triclosan
  - Pentachlorophenol
  - Pentabromophenol
New Methods to be Developed (DTSC)

• Perfluorinated compounds
  – Perfluorooctanoic acid
  – Perfluorooctane sulfonic acid
  – Perfluorohexane sulfonic acid
  – 2-(N-ethyl-perfluorooctane sulfonamido) acetic acid
  – 2(N-Methyl-perfluorooctane sulfonamido) acetic acid
  – Perfluorodecanoic acid
  – Perfluorobutane sulfonic acid
  – Perfluoroheptanoic acid
  – Perfluorononanoic acid
  – Perfluoroundecanoic acid
  – Perfluorododecanoic acid
New Methods to be developed (CDPH)

• Dialkyl Phosphate (DAP) Metabolites
  – Dimethylphosphate (DMP)
  – Dimethylthiophosphate (DMTP)
  – Dimethyldithiophosphate (DMDTP)
  – Diethylphosphate (DEP)
  – Diethylthiophosphate (DETP)
  – Diethyldithiophosphate (DEDTP)

• Specific Organophosphate (OP) metabolites
  – 3,5,6-Trichloro-2-pyridinol (chlorpyrifos metabolite)
  – 2-Isopropyl-4-methyl-6-hydroxypyrimidine (diazinon metabolite)
New Methods to be developed (CDPH)

- Environmental Phenols
  - Bisphenol A
  - 2,4,4’-Trichloro-2’-hydroxyphenyl ether (Triclosan)
  - 2-Hydroxy-4-methoxybenzophenone (Benzophenone-3)
  - methyl paraben
  - butyl paraben

- Phthalate Metabolites
  - Diethyl phthalate (DEP)
  - Dibutyl phthalate (DBP)
  - Benzylbutyl phthalate (BzBP)
  - Di-2-ethylhexyl phthalate (DEHP)
  - Di-n-octyl phthalate (DOP)
New Methods to be developed (CDPH)

Polycyclic Aromatic Hydrocarbons
- 3-hydroxyphenanthrene
- 6-hydroxychrysene
- 3-hydroxybenzo(a)pyrene
- 1-nitropyrene

Metals
- Arsenic speciation in Urine
- Mercury speciation in Blood
CDC Request for Applications (RFA)

- Preparing proposal in response to recent RFA issued by CDC for State Public Health Laboratories
  - Intended to increase capability and capacity of state public health laboratories to conduct biomonitoring
- Letter of Intent due March 9, 2009
- Application deadline – April 6, 2009
- Anticipated award date – August 31, 2009
- 5-year cooperative agreement, contingent on funding
Laboratory Staff Training at CDC

- Staff training at CDC planned for June 2009
- Develop Standard Operating Procedures, test methods
- Fall 2009 – aim to begin analyses of archived (RFI) and other samples
Questions/comments regarding Laboratory Status?
Status of Request for Information (RFI)

- Last SGP meeting – program was about to request additional information from researchers
- Since then, received supplemental information on specific analytes of interest, sample volumes, desired timeline for results, available resources
- Timeline for installation of equipment more prolonged than anticipated; lab resources somewhat more limited
- Tentative commitments to 4 projects
Tentative CDPH commitments for analyzing archived biospecimens

- 300-500 urine samples for DAPs, chlorpyrifos,
  - UC Davis Childhood Autism Risks from Genetics and the Environment (CHARGE)
- 30 urine samples for phthalates and Bisphenol A
  - UC Davis Markers of Autism Risk in Babies – Learning Early Signs (MARBLES)
- 50 urine samples for phthalates and Bisphenol A
  - UC Berkeley Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS)
Tentative DTSC commitment for analyzing archived biospecimens

- 230 serum samples for PBDEs, other BFRs, and Triclosan
  - Columbia University study of California men
    [participants’ mothers’ sera were analyzed previously (Child Health and Development Studies)]
Questions or Comments about RFI?
Collaborations with Environmental Health Tracking Program

**Tulare County**
- Pesticide drift
- Analytes in urine
  - Nonspecific OP pesticide metabolites
  - Chlorpyrifos-specific metabolite (TCP)
- ~ 30 participants
- Monitoring
  - Urine analysis (EHLB)
  - Air monitoring (EHLB)
- Results Communication

**Imperial County**
- Perchlorate water contamination
- Analytes in urine
  - Perchlorate
  - Selected heavy metals
- ~ 30 participants
- Monitoring
  - Urine analysis
  - Water analysis
  - Crop analysis (melons)
- Results Communication
Environmental Health Tracking Projects: Key Collaborators

**Tulare County (Pesticides)**
- NGOs
  - Pesticide Action Network of North America (PANNA)
  - Commonweal
  - El Quinto Sol (local CBO)
- County Health Dept
- Local Health Clinic

**Imperial County (Perchlorate)**
- NGOs
  - Comité Civico del Valle
- Government
  - DTSC (water)
  - CDC (urine method validation and split samples)
  - CDPH Food and Drug Branch (melons)
- University of Arizona
  - Method validation for heavy metals in urine
Questions or comments regarding CECBP’s collaborations with Environmental Health Tracking Program?