

DTSC Laboratory Update



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Report to Scientific Guidance Panel
Oakland
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Status

- **Staffing/resources**
- **Capabilities for analysis of chemicals on the Priority List**
- **Progress with field studies**
- **Other activities**

Staffing

- **CECBP-funded:**
 - Dr. Miaomiao Wang (RS-III) → PFCs
 - Yunzhu (Judy) Wang (RS-I) → POPs (PBDEs, PCBs, OCPs)
- **CDC-funded:**
 - Dr. Tan Guo (ELS-III) → POPs
 - Dr. Suhash Harwani (ELS-II) → PFCs
 - Dr. Sabrina Crispo-Smith (ELS-II) → POPs & new methods
 - Recruiting for ELS-II
- **DTSC funded:**
 - Several in-kind → Supervision, sample management and aliquoting, instrumentation support, POPs, PFCs, BFRs, OH-metabolites, BPA and bromophenols, QA/QC

Training

- In-house training for new Agilent GC-MS/MS
- Four-day training at Agilent (Atlanta) in May
- Visit NY-DPH and CDC in April
- Visit WA-DPH in June
- Visit from WA-DPH in August
- Continuing education (APHL webinars, ECL Seminars, etc.)

Agilent GC-MS/MS



Quality Control

- **PFCs: Passed CDC Proficiency Test**
- **BPA: Successfully participated in UCSF exchange**
- **Will participate in International Proficiency Testing Programs for all available analytes**
- **Using NIST certified material, when available**
- **Internal Quality Management Program**

Validated Methods and Capabilities for measuring in serum:

Polychlorinated biphenyls (PCBs) 15 + 10 metabolites

Organochlorine pesticides (OCPs) 7

Polybrominated diphenyl ethers (PBDEs) 19 + 8 metabolites

Other brominated or chlorinated FRs 13 BFRs, 1 CFR

Perfluorochemicals (PFCs) 12

Phenols 6

BPA, TBBPA, Pentachlorophenol, Triclosan,
2,4-Dibromophenol, 2,4,6-Tribromophenol

Progress on studies:

	MIEEP (n=141)	FOX (n=104)	CA Teachers (n=2,600)	Pilot- BEST (n=110)	UCB CLS (n=50)
Aliquoted/Lipids	141	104	637	110	
PFC	141	104	320	25	NR
PCB/OCP	141	102*	100		
PBDE	141	102*	100		
OH-BDEs	30	NR	NR	NR	NR

* 2 samples need to be repeated

NR= Not requested

Other Activities

**DTSC-funded activities that benefit
Biomonitoring California**

Progress on the CA Teachers Study

- In collaboration with:
Cancer Prevention Institute of California, UCI, USC, City of Hope
- Funded by CA Breast Cancer Research Program
- Blood samples from ~1,300 cases and 1,300 controls from entire State
- Approximately 900 samples received so far
- Analysis of PCBs, PBDEs, BFRs, PFCs, Thyroid Hormones, Lipids
- Sample preparation, PFC, POPs analyses in progress

Measuring POPs, PAHs, BFRs in dust

- Validated protocols for measuring PAHs, PCBs, PBDEs, BFRs in dust from vacuum cleaner bags
- House dust
- Firehouse dust (FOX)

PBDEs in Dust

Whitehead et al. 2011, 2012

Household Dust (UCB Childhood Leukemia Study)

- Vacuum cleaner dust from 204 houses sampled twice (2001-07 and 2010)
- No statistically significant decrease in Penta-, Octa-, or Deca-BDEs;
- **PBDEs may persist in residential dust for many years after their production has ceased**
- Evidence of Deca-BDE debromination
- Differences by income, race, geographic region

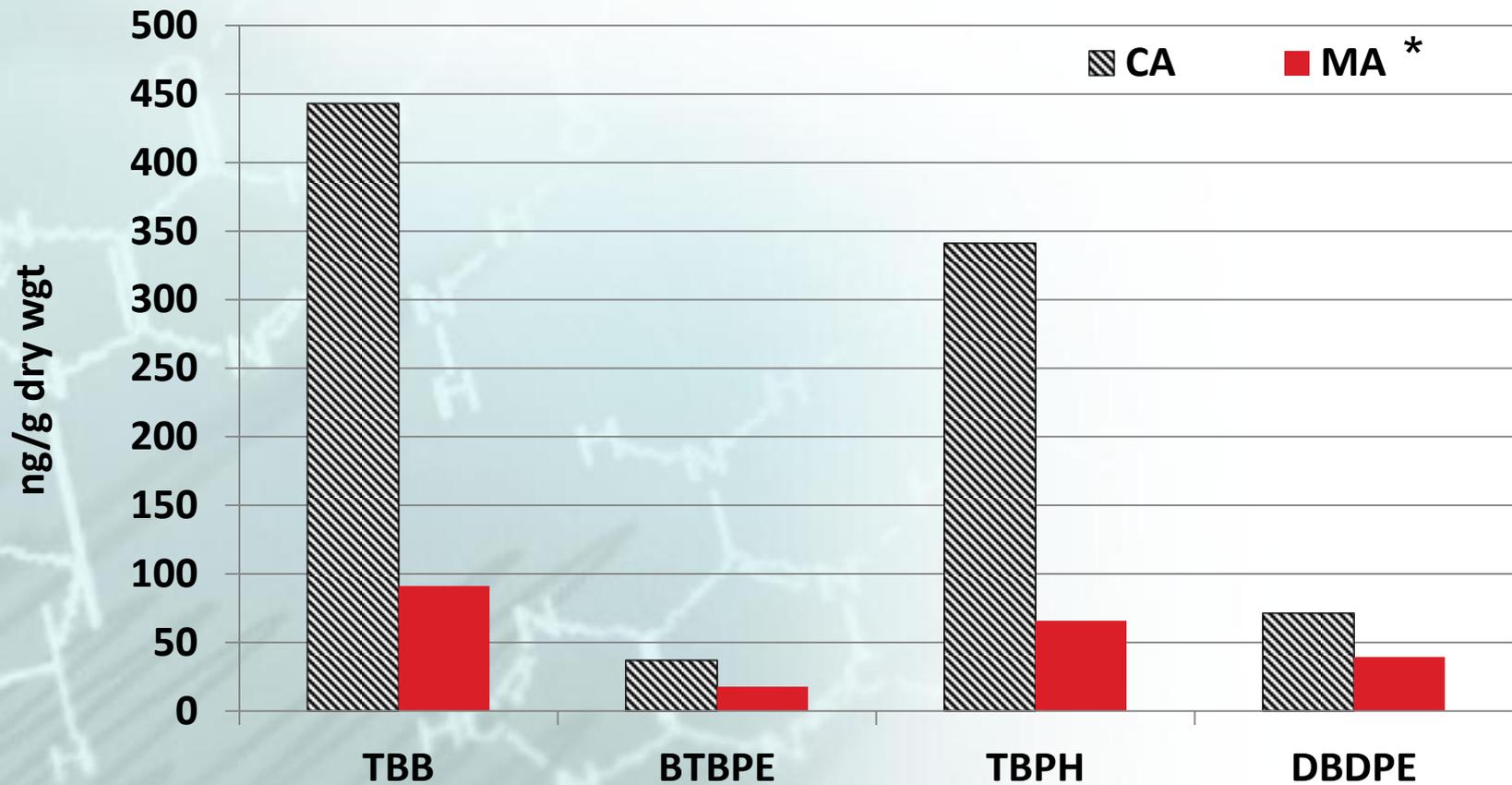
New BFRs in Dust

- **Most prevalent:**
 - Bis(2-ethyl-1-hexyl) tetrabromophthalate (TBPH)
 - 2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate (TBB)
 - 1,2-Bis(2,4,6-tribromophenoxy)ethane (BTBPE)
 - Decabromodiphenyl-Ethane (DBDPE)
- **Trace levels:**
 - Pentabromoethylbenzene (PBEB)
 - 2,3-Dibromopropyl-2,4,6-tribromophenyl ether (DPTE)
 - Pentabromotoluene (PBT)
 - Hexabromobenzene (HBB)
- **Present at similar levels in house dust and firehouse dust**

} Firemaster 550

BFRs in house dust: CA (2010) vs. Boston (2006)

FR Brown et al. 2012



* MA data from Stapleton et al. 2008

Safer Consumer Products

- **Phthalates in Children's items**
 - **Screening method developed**
 - **Ting et al. JAOAC International, 2009**
- **BPA in products**
 - **Developing LC-MS method for screening BPA, BPS in canned food liners, receipts**

QUESTIONS?