

BIOMONITORING CALIFORNIA

Update from the
***California Environmental Contaminant
Biomonitoring Program***

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Annual Meeting
Associations of Public Health Laboratories
Little Rock, AR
June 1, 2014

Presentation

- Overview of program
- Collaborations
- Results Return
- New & Upcoming activities

How to create a State Biomonitoring Program

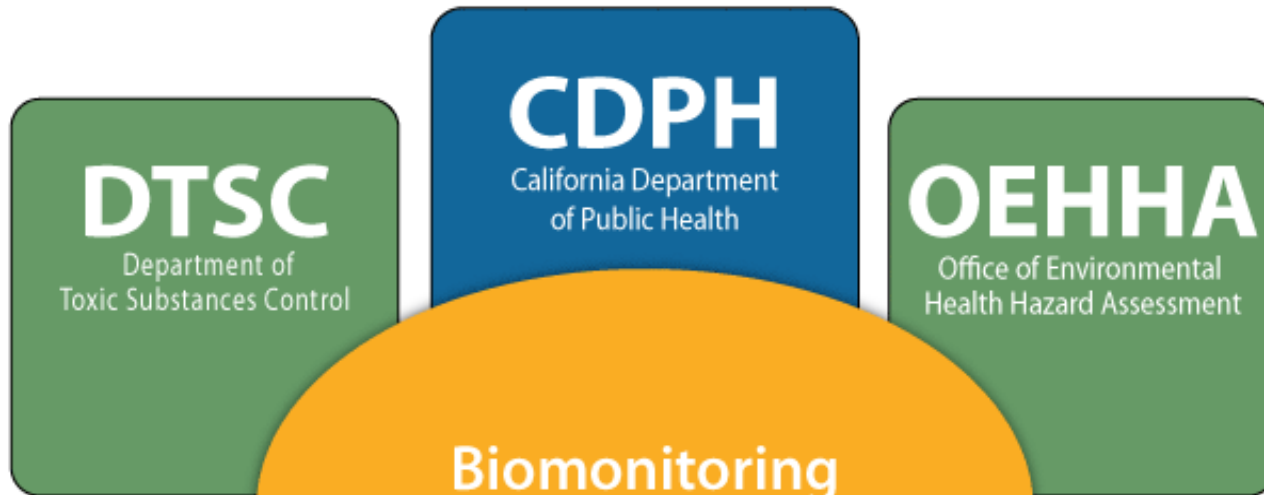


- **2001-03:** CDC planning grant to formulate a state-based program
- **2005:** Legislation passes, but Governor vetoes; directs State Agencies to develop a *Plan*
- **2006:** Sponsors promote new bill; passed and signed by Governor
- **2007:** State funding starts
- **2009-2014:** CECBP receives 5-year Cooperative Agreement from CDC



Governor Arnold Schwarzenegger, September 30, 2006.
CA Health & Safety Code §105440 *et seq.*; SB 1379 (Perata).

CECBP Structure



DTSC
Department of
Toxic Substances Control

CDPH
California Department
of Public Health

OEHHA
Office of Environmental
Health Hazard Assessment

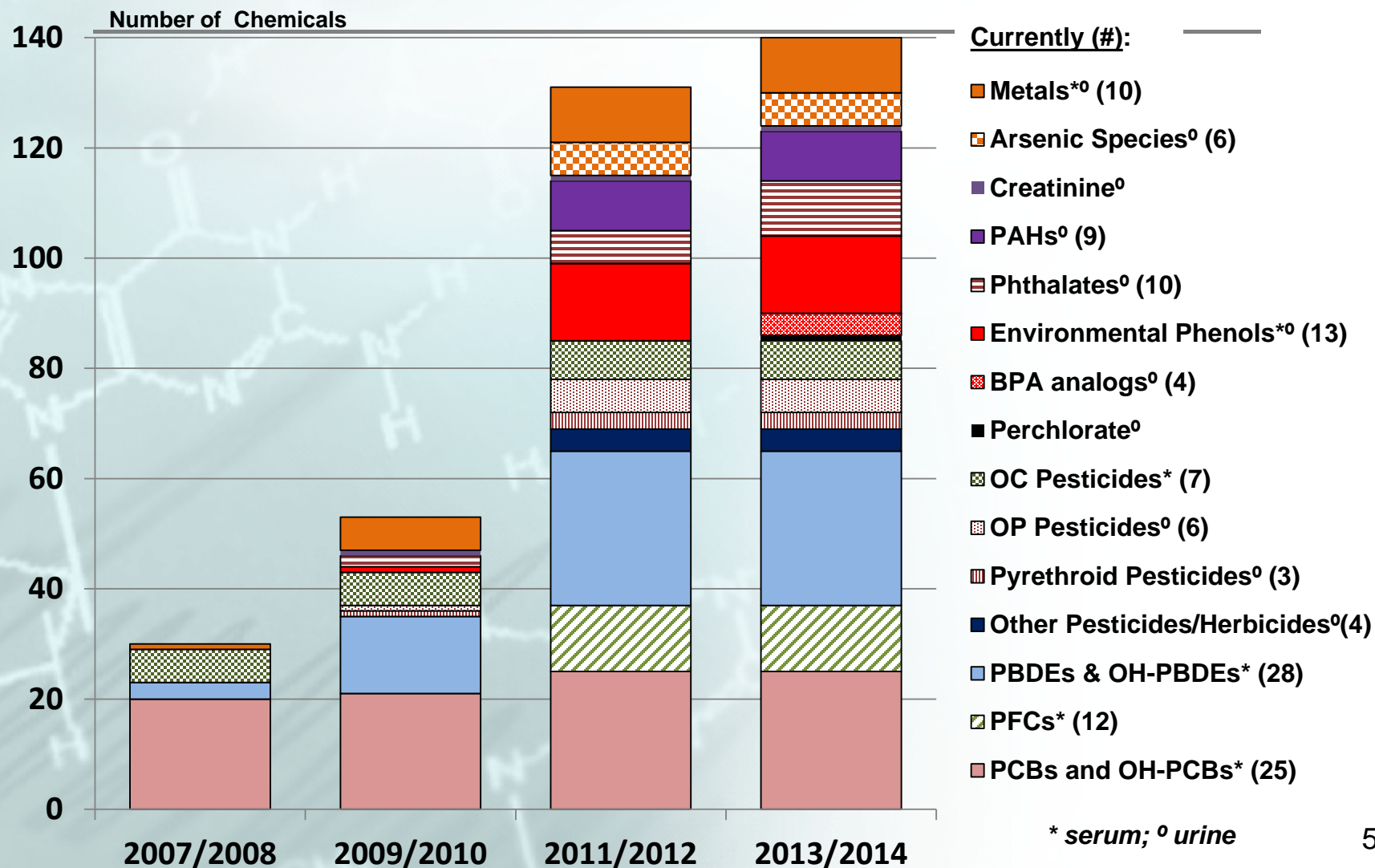
**Biomonitoring
California**

Public Participation

Scientific Guidance
Panel

Centers for Disease Control and Prevention

Development of New Methods



Biomonitoring Studies

CECBP (“Full”) Collaborations

- 3 major studies; 500+ subjects

Laboratory Collaborations

- 8 partnerships; 3000+ subjects

Maternal & Infant Environmental Exposure Project (MIEEP)



Partners: UC San Francisco Program on Reproductive Health & the Environment (PRHE), and UC Berkeley School of Public Health

Firefighter Occupational Exposures (FOX)



Partners: UC Irvine - Center for Occupational & Environmental Health

Biomonitoring Exposures Study (BEST)



Partner: *Kaiser Permanente* Division of Research,
Research Program on Genes, Environment, & Health 9

Biomonitoring Studies:

Laboratory Collaborations

- **Center for the Health Assessment of Mothers and Children of Salinas.** Phthalates (urine) for 5-year-old children living in an agricultural community in the Salinas Valley (n=49).
- **Cohort of Young Girls' Nutrition, Environment, and Transitions.** Metals (blood) for teenagers and young girls in the San Francisco Bay Area (n=500).
- **Markers of Autism Risk in Babies – Learning Early Signs.** Phthalates (urine) for pregnant women with an autistic child (n=28).
- **Pesticide Drift 2 Study.** Pesticide metabolites (urine) for individuals in a rural agricultural community (n=40).
- **UCSF - Second-Trimester Pregnant Women .** *Two ethnically diverse and predominantly low-income cohorts (2008-09 and 2011-12); PFCs, PCBs, OCPs, and PBDEs and their metabolites in serum (n=25/36).*
- **UC Berkeley Leukemia Study.** *PBDEs (serum) from mothers (n=50).*
- **UC Irvine - Environmental Contaminants and Fertility .** *OH-PAHs (urine) in women to examine a possible link to ovarian dysfunction (n=99).*
- **California Teachers Study.** PFCs, PBDEs, PCBs, and OCPs (serum) from women with/without breast cancer (n=~1,000/1500).

Results Return Challenges

Required by law to make results available to participants in BC studies, unless “opt out”

- Easy-to-understand, plain language
- Give context... almost 100 analytes, few have established “levels of concern”
- Evaluate participant understanding...avoid information overload
- Timing issues ...delay versus multiple reports
- Resources/cost

Part 1: Metals in Urine

Your Lab Result for Arsenic

We tested your urine for arsenic. Arsenic is found in soil and water in some areas, and in some foods. It occurs naturally and from human activity....

Your arsenic result	Lowest result found in this study	Highest result found in this study	Number of participants in this study with arsenic in their urine	Middle level in the U.S.	95th percentile in the U.S.	Level of Concern
15.5	0.15	81	All 110	8.8	93.1	50

Did you find arsenic in my urine?

Yes. Your arsenic result was 15.5 $\mu\text{g/L}$.

What can I compare my result to?

You can use the table above to compare your arsenic result to:

- **Other participants in this study.** We found arsenic in all 110 participants tested. The results ranged from 0.15 to 81 $\mu\text{g/L}$.
- **Middle level in the U.S.** Half the adults tested in the U.S. had a result below 8.8 $\mu\text{g/L}$ and half above.
- **95th percentile in the U.S.** 95% of adults tested in the U.S. had a result below 93.1 $\mu\text{g/L}$.

The U.S. middle level and 95th percentile do not tell us anything....

CECBP Fact Sheets

- Arsenic
- Cadmium
- Lead
- Manganese
- Mercury
- 2,4-D
- 2,4,5-T
- OC Pesticides
- OP Pesticides
- Pyrethroid Pesticides
- PCBs
- PBDEs
- PFCs
- PAHs
- Benzophenone-3
- Bisphenol A
- Parabens
- Phthalates
- Triclosan
- o-Phenylphenol
- 4-t-Octylphenol

Program Documents

- For Participants
- Legislative Reports
- Scientific Documents
- Public Health Alerts
- Website

Website - www.biomonitoring.ca.gov

CA.GOV **BIOMONITORING CALIFORNIA**

A joint program of
California Department of Public Health
Department of Toxic Substances Control
Office of Environmental Health Hazard Assessment

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Learn more about Biomonitoring California

visit our online Biomonitoring Guide

What is Biomonitoring?

What is biomonitoring?

Chemicals in everyday life

Chemicals and our health

Why is biomonitoring important?

What is biomonitoring?
Biomonitoring is a way to measure the chemicals in a person's body. It can tell us which chemicals are getting into people and at what levels. Scientists usually test for chemicals in samples of blood and urine. There are only a few labs that can do this testing.

Click here to learn more about Biomonitoring California

Biomonitoring California

The purpose of the California Environmental Contaminant Biomonitoring Program, also called Biomonitoring California, is to:

- Determine levels of environmental chemicals in a representative sample of Californians
- Establish trends in the levels of these chemicals over time
- Help assess the effectiveness of public health efforts and regulatory programs to decrease exposures to specific chemicals.

Biomonitoring California: Measuring Chemical Exposures Study

Click to play video about Biomonitoring California

Office of Governor Edmund G. Brown Jr. Visit his Website

Learn more about Biomonitoring California

Printer-friendly version

New Initiatives

- Green Chemistry
- California Biobank
- Targeted Screening

California Biobank

Genetic Disease Screening Program (GDSP)

Prenatal Screening

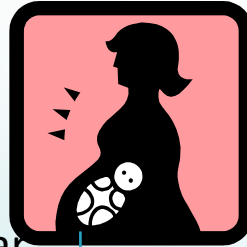
Offered to pregnant woman by prenatal care provider

Approximately 350,000 cases/year

Blood drawn in 1st +/or 2nd trimester

Patient demographics:

- Age at term
- Race
- Weight
- Residency



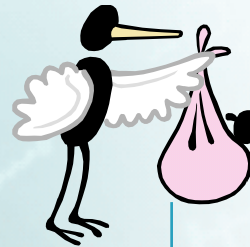
Newborn Screening

~90% of all California births (500,000 /year)

Heel stick/blood spot

Patient demographics:

- Sex
- Birth weight
- GA at delivery
- Time/date of birth
- Time/date of sampling
- Race/ethnicity (maternal)
- Residency



Biobank archives

Serum: 7 CA Counties

DBS: Statewide

Targeted Screening

Approach

- Treat known compounds as targeted unknowns
- Build accurate mass & isotope profile data base for all relevant compounds:
- Toxic Chemical Finder (TCF) library contains over 600 compounds

Goals

- Build high through-put screening master method
- Identify emerging chemicals
- Conduct post analysis data acquisition



Lessons Learned (so far)

- CECBP is very complex organization
 - Challenges
 - Opportunities
- Start-up
 - Costly – \$, facilities, staff, goodwill
 - Long ramp-up
- Partners are essential
- Keep stakeholders engaged

Acknowledgments

- CDC staff and management
- Research collaborators: *University of California, Kaiser Permanente Division of Research*, others
- Study participants
- Members of the *Scientific Guidance Panel*
- The *Breast Cancer Fund* and *Commonweal*, sponsors of the legislation that established Biomonitoring California



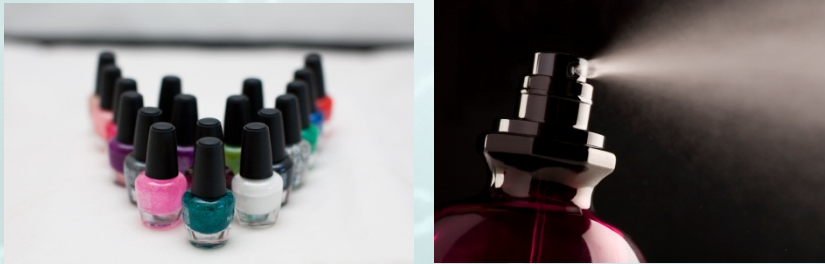
Thank you!

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Chemicals in Personal Care Products

Phthalates (fragrance)



Parabens (preservative)



Triclosan (antibacterial)



Benzophenone-3 (sunscreen)

