



Program Update

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Biomonitoring California

Scientific Guidance Panel Meeting

November 8, 2012 – Sacramento, CA

Program Updates

1. Staffing

2. Projects

Maternal and Infant Environmental Exposures (MIEEP)

Firefighter Occupational Exposures (FOX)

Biomonitoring Exposures Study (BEST)

3. Prenatal samples

4. Survey of Health Officers

5. Website update

Staff Changes

- Thank you and farewell to Danny Kwon and Dina Dobraca
- Welcome to Ying Li and Sara Encisco
- Still no Program Lead

Current MIEEP Status

Recruitment	Collection	Data	Results
✓ Recruit, enroll, and consent participants	✓ Collect maternal urine	✓ Analyze 1 st set of chemicals	✓ Translate materials into Spanish
✓ Preliminary interview	✓ Interview participants	Analyze 2 nd set of chemicals	✓ Return 1 st set of results
✓ Distribute exposure questionnaires	✓ Collect take-home questionnaire	✓ Abstract medical records	Return 2 nd set of results
	✓ Collect maternal blood	✓ Enter questionnaires & medical records	Analyze participant understanding
	✓ Collect umbilical cord blood	Analyze data	

FOX Analyses

Analyte	Status
Metals in blood (cadmium, lead, mercury, manganese)	Complete
Perfluorinated compounds (PFCs)	Complete
Polybrominated diphenyl ethers (PBDEs)	Complete
Polychlorinated biphenyls (PCBs)	Complete
Organochlorine pesticides (OCPs)	Complete
Creatinine	Under review
Phthalates	Under review
Hydroxy polycyclic aromatic hydrocarbons (OH-PAHs)	Under review
Bisphenol A (BPA), triclosan and benzophenone-3	Under review
Pyrethroid and Organophosphate (OP) metabolites	Under review
Dialkyl phosphate metabolites (DAPs)	Under review
Metals in urine	In progress

Current Pilot BEST Status

Recruitment	Collection	Data	Results
✓ Recruit participants from random sample	✓ Collect blood and urine	✓ Enter data	✓ Usability testing – English
✓ Schedule home visits	✓ Collect exposure assessment questionnaires	✓ Analyze 1 st set of analytes (Mn, As, Hg and PFCs)	Return 1 st set of results
✓ Consent & enroll participants at visit	Abstract information from medical records	Analyze 2 nd set of analytes	Return 2 nd set of results
		Analyze data	Evaluation survey

Aggregated Analyte Measurements - Biomonitoring California laboratory data

- Metals in blood
- PBDEs
- PCBs
- PFCs
- Environmental phenols

Aggregated Analyte Measurements – Metals in blood

<u>Chemical</u>	<u>Study</u>	<u>Number of Samples (n)</u>	<u>Detection Frequency</u>
Cadmium	A,B,D,J	822	63%
Lead	A,B,D,J	822	100%
Manganese	A,B,J	741	100%
Mercury	A,B,D,J	822	98%

A = CYGNET B = FOX D = MIEEP J = BEST

Aggregated Analyte Measurements – Polybrominated diphenyl ethers (PBDEs)

<u>Chemical</u>	<u>Study</u>	<u>n</u>	<u>Detection Frequency</u>
BDE-28	B,D,F	203	76%
BDE-47	B,D,E,F	237	95%
BDE-66	B,D,F	203	6%
BDE-85	B,D,F	203	30%
BDE-99	B,D,E,F	236	79%
BDE-100	B,D,F	203	95%
BDE-153	B,D,E,F	236	94%
BDE-154	B,D,F	203	18%
BDE-183	B,D,F	203	5%
BDE-197	B,D,F	203	49%
BDE-206	B,D,F	203	8%
BDE-207	B,D,F	203	42%
BDE-208	B,D,F	203	10%
BDE-209	B,D,F	203	38%

B = FOX

D = MIEEP

E = ECL pilot study

F = UCSF pilot study

Aggregated Analyte Measurements – Polychlorinated biphenyls (PCBs)

<u>Chemical</u>	<u>Study</u>	<u>n</u>	<u>Detection Frequency</u>
PCB-66	B,D,E,F	224	41%
PCB-74	B,D,E,F	237	63%
PCB-99	B,D,E,F	237	62%
PCB-101	B,D,F	203	32%
PCB-118	B,D,E,F	237	73%
PCB-138	B,D,E,F	237	94%
PCB-153	B,D,E,F	237	96%
PCB-156	B,D,F	203	53%
PCB-170	B,D,E,F	237	78%
PCB-180	B,D,E,F	226	96%
PCB-187	B,D,E,F	237	71%
PCB-194	B,D,E,F	237	60%
PCB-203	B,D,E	212	64%

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Aggregated Analyte Measurements – Perfluorinated Compounds

<u>Chemical</u>	<u>Study</u>	<u>n</u>	<u>Detection Frequency</u>
2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid	B,D,F,J,K	592	64%
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid	B,D,F,J,K	592	99%
Perfluorobutane sulfonic acid	B,D,F,J,K	592	14%
Perfluorodecanoic acid	B,D,F,J,K	592	86%
Perfluorododecanoic acid	B,D,F,J,K	592	26%
Perfluoroheptanoic acid	B,D,F,J,K	592	63%
Perfluorohexane sulfonic acid	B,E,F,J,K	526	100%
Perfluorononanoic acid	B,D,F,J,K	592	100%
Perfluorooctane sulfonamide	B,D,F,J,K	592	84%
Perfluorooctane sulfonic acid (PFOS)	B,D,E,F,J,K	625	100%
Perfluorooctanoic acid (PFOA)	B,D,E,F,J,K	625	95%
Perfluoroundecanoic acid	B,D,F,J,K	592	99%

B = FOX D = MIEEP E = ECL pilot study F = UCSF pilot study J = BEST
K = California Teachers' Study

Aggregated Analyte Measurements – Environmental phenols

<u>Chemical</u>	<u>Study</u>	<u>n</u>	<u>Detection Frequency</u>
Bisphenol A	MIEEP	91	93%
Triclosan	MIEEP	91	95%
Benzophenone-3	MIEEP	91	88%

Feasibility of Biomonitoring CDPH Prenatal Screening (PNS) Program

- PNS screens about 400,000 patients/year for possible neural tube defects and major genetic disorders
- 1st and 2nd trimesters
- Samples collected in 4 mL serum separator tubes and sent by mail for testing w/in 7 days to a Newborn and Prenatal Screening (NAPS) lab
 - Residual sample discarded after 30 days in 5 of 7 NAPS
 - In 2 of 7 NAPS labs, residual aliquoted to cryogenic vials and archived at -70°C in Long Beach repository
 - Screening includes consent/decline for research

Feasibility of Biomonitoring CDPH Prenatal Screening (PNS) Program (cont'd)

- Data on maternal race/ethnicity, age, weight, location, est. gestational age, can be used for both stratification and analysis
- Can subsequently be linked to CA databases (birth defects, cancer, mortality, hospitalizations)
- Sample acquisition cost \$37/vial + add'l fees for records
- Archived samples part of NIH-funded CA Biospecimen Bank in Long Beach (moratorium on acquisition by researchers until 2013)

Feasibility of Biomonitoring CDPH Prenatal Screening (PNS) Program (cont'd)

- **Limitations**
 - relatively small residual sample volume (0.5 – 2 mL); may require pooling
 - metal PNS probes inserted into vials, which can be left open on autosampler racks for several hours: possible contamination problem
- **Next steps**
 - Lab staff has obtained blank tubes for testing
 - Series of QC tests to identify potential artifacts

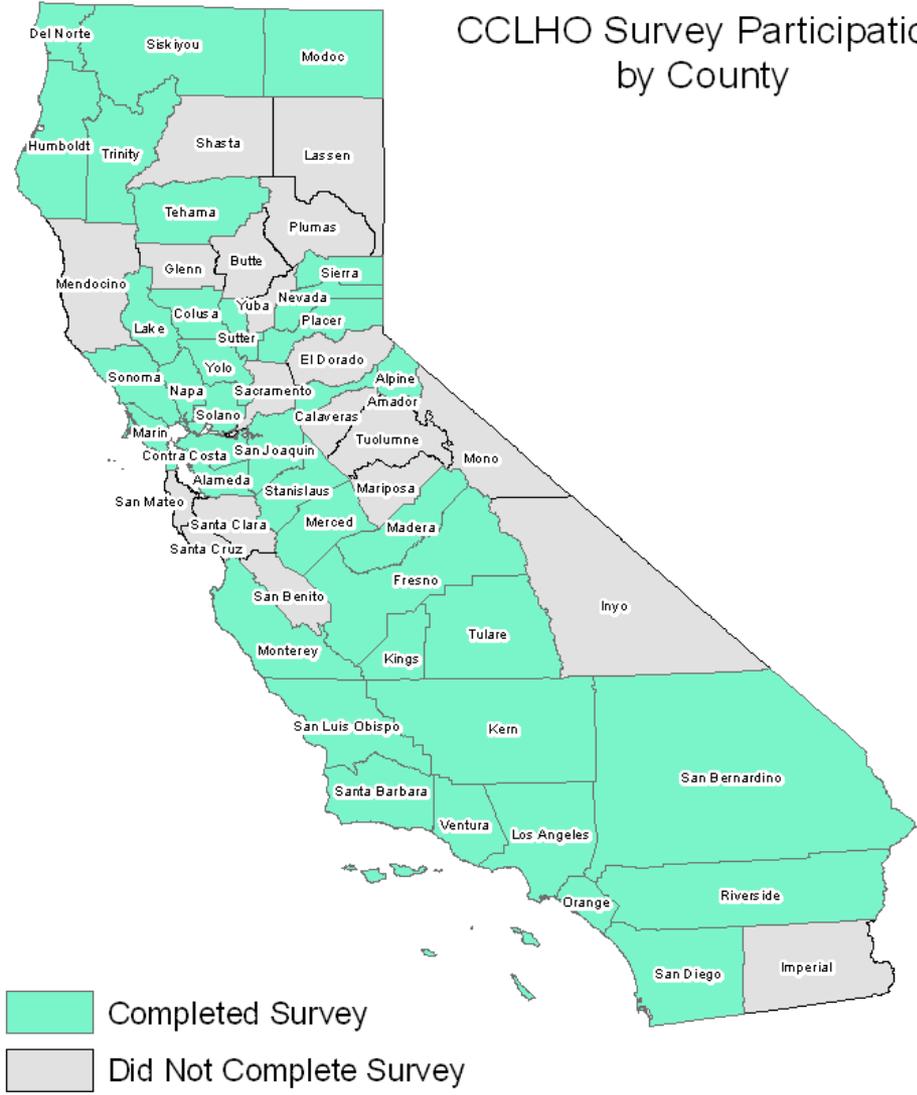
Survey of California Local Health Officers and Directors of Environmental Health

- Electronic survey distributed to Health Officers and Environmental Health Directors in June 2012
- Developed with input from the CDPH Division of Environmental and Occupational Disease Control and Office of Environmental Health Hazard Assessment
- Email notification and survey monkey link distributed through CDPH Director's Office

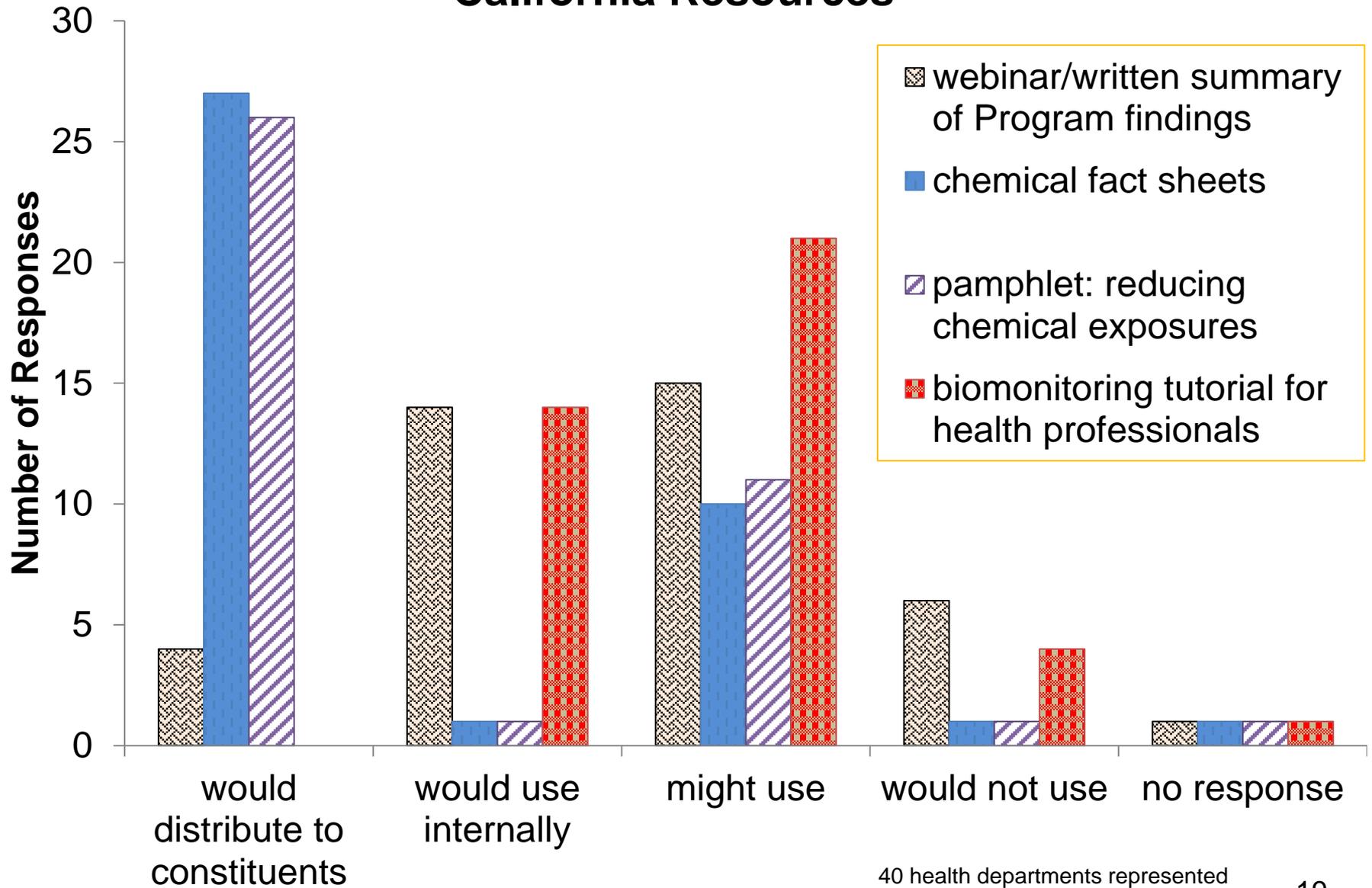
Survey summary

- Received 47 completed surveys, representing 40 health and environmental health departments for counties including 86% of California's population
- 55% of respondents had heard of Biomonitoring California
- 21 representatives from 19 health departments signed up for our listserv

CCLHO Survey Participation by County



Survey Respondents' Interest in Biomonitoring California Resources



40 health departments represented

Launch of New Website Coming in 2013

- Original site
 - Meetings-focused organization
- Revised site
 - Designed to appeal to a wider audience
 - Optimized for hand-held devices
- Will include interactive features, videos



Draft version

Example of Feature on New Website: Interactive Brochure



What is biomonitoring?

Chemicals in everyday life

Chemicals and our health

Why is biomonitoring important?

What does a biomonitoring project involve?

Which chemicals are measured?

What is biomonitoring?

Biomonitoring (bi-o-MON-i-tor-ing) is a way to measure the chemicals in a person's body. It can tell us which chemicals are there and how much.

Scientists usually test for chemicals in samples of blood and urine. There are only a few labs that can do this testing.

Biomonitoring California

The Scientific Guidance Panel



- Simple explanations
- Links to detailed information
- Easy to navigate
- Interactive
- Fully accessible

Website Launch - Outreach



- Testing new site both pre- and post-launch
- Reaching out to new audiences
 - Distributing information at conferences
 - Sharing via other listservs
 - Suggestions?