Initial Results from Biomonitoring California Collaborations

Rupali Das, MD, MPH
Lead, Biomonitoring California
California Department of Public Health

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Purpose of this Agenda Item

- Inform the Panel and public of initial results of Biomonitoring California collaborations
- Obtain input on content and presentation of
  - The materials submitted to the Panel
  - Data Summary Report (July 2012)

Content of "Initial Results" Materials

- Key messages
- Chemicals that Biomonitoring California laboratories can measure
- Descriptions of project collaborations
- Initial combined results from Biomonitoring California collaborations
- Looking forward

Biomonitoring California's initial studies have identified many chemicals, including flame retardants, pesticides, and plasticizers, in California residents.

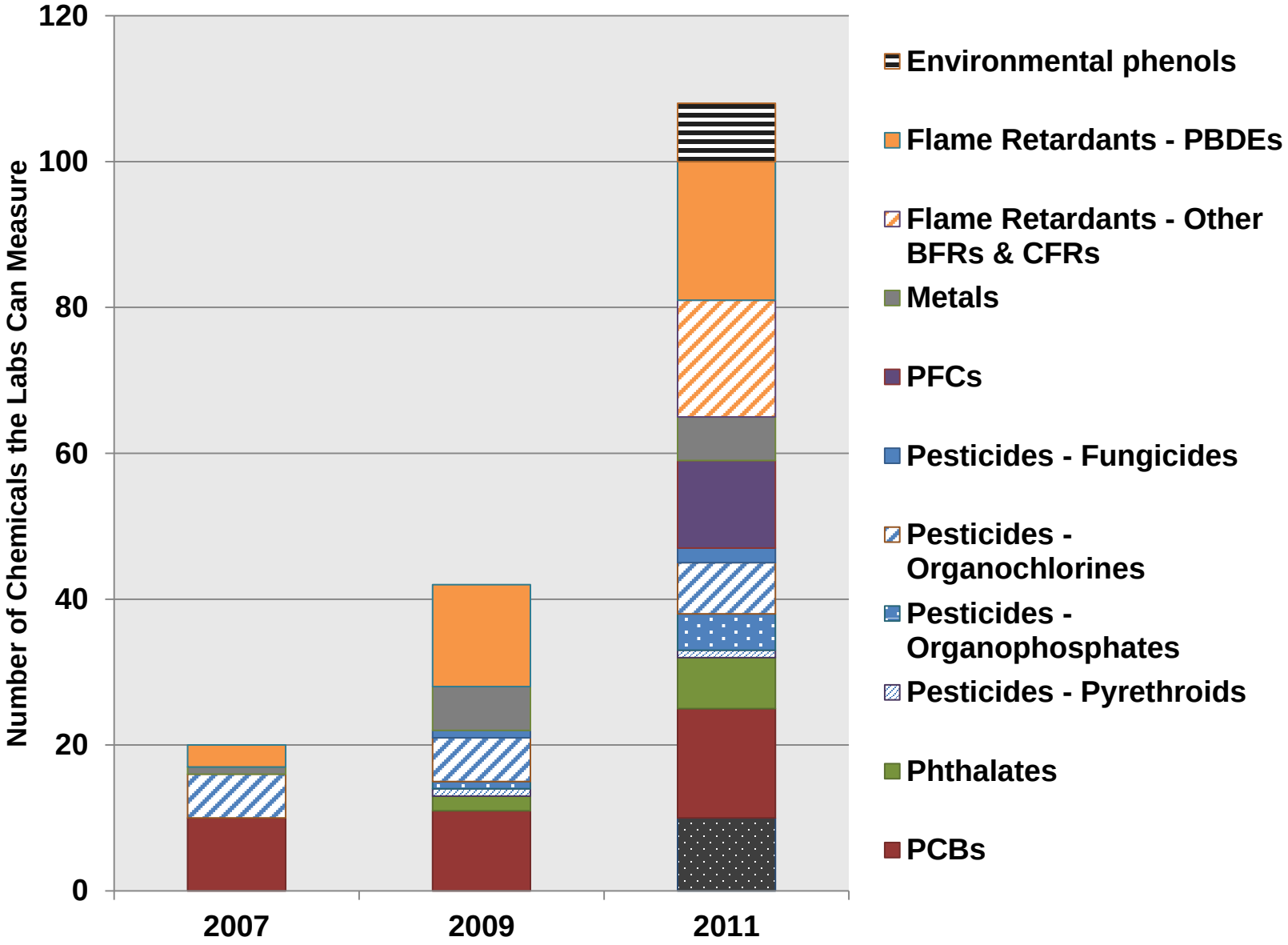
Biomonitoring California now has the ability to measure close to 100 chemicals in people and has tested more than 700 Californians.

Biomonitoring California has leveraged limited state resources through successful collaborations.

Chemicals that Biomonitoring California Laboratories Can Measure

- Expanding analytical capabilities to measure chemicals in people
- Figure 1: progress over time
- Table 1: chemicals the labs can measure

Figure 1: Chemicals that Biomonitoring California Laboratories Can Measure - Progress, 2007-2011



Chemicals that Biomonitoring California Laboratories Can Measure – March 2012*

Environmental phenols	Environmental phenols have a common chemical structure, so are analyzed as a group. They have a wide variety of uses, described briefly below.	*Analyzed in urine:* Benzophenone-3 BPA 4-t-OP 4 parabens Triclosan *Analyzed in serum:* BPA Triclosan
Benzophenone-3	Benzophenone-3 is a UV blocker used in sunscreens and plastics.	
Bisphenol A (BPA)	BPA is used to make protective coatings, like those inside metal food cans that prevent rust and corrosion. It is also the building block for a hard plastic called polycarbonate.	
4-t-Octylphenol (4-t-OP)	4-t-OP is used in rubber and has been found in recycled tires. 4-t-OP is also used to make ingredients for protective coatings, paints, varnishes, and detergents.	
Parabens	Parabens are widely used as preservatives in cosmetics, lotions, shampoos, deodorants, pharmaceuticals, foods, and beverages.	
Triclosan	Triclosan is used to kill bacteria. It is added to soaps and other consumer products labeled "antibacterial" or "antimicrobial."	
Phthalates	Phthalates are added to vinyl to make it soft and flexible. Vinyl products include	*Analyzed in urine*:
	shower curtains, flooring, and plastic tubing. Phthalates are also in some nail polish and scented products.	6 phthalate metabolites
Polychlorinated biphenyls (PCBs)	PCBs were banned in the late 1970s but last a long time in the environment. They are found in high-fat fish and high-fat animal and dairy products. PCBs are also found in old caulk and old fluorescent light fixtures.	*Analyzed in serum:* 15 PCBs 10 PCB metabolites

*Excerpt of Table 1

Biomonitoring California Collaborations

- Include studies of more than 10 populations
- Essential collaborations:
  - University of California
  - Orange County Fire Authority
  - Kaiser Permanente
- CDC five-year Cooperative Agreement provides critical support for Program advancement

Types of Biomonitoring California Collaborations

1. Full Project Collaborations: Biomonitoring California designed and carried out the entire study in partnership with other organizations. This includes choosing the population; recruiting participants in the study; collecting survey information and blood and urine samples; and conducting laboratory analyses.

2. Laboratory Collaborations: Biomonitoring California conducted laboratory chemical analyses on blood and urine samples collected by outside partners as part of other research projects.

Example of Narrative Description

Full Project Collaboration

The **Firefighter Occupational Exposures (FOX) Project** is a study of environmental chemical exposures in firefighters conducted in partnership with the University of California (UC) Irvine's Center for Occupational and Environmental Health and the Orange County Fire Authority. Questionnaire information and blood and urine samples were collected in 2010-2011 from 101 male and female firefighters in Orange County, California. Firefighters were chosen because they are likely to be exposed to toxic chemicals as a result of their profession.

Example of Narrative Description

Laboratory Collaboration

The **Center for the Health Assessment of Mothers and Children of Salinas** (**CHAMACOS**), a study conducted by researchers at UC Berkeley, is following a cohort of children in the agricultural communities of the Salinas Valley. Their mothers were enlisted while pregnant, and the children have been followed through age 12 to learn more about the potential impact of chemical and other environmental exposures on children's health. Biomonitoring California laboratories analyzed phthalates in urine samples from a subset of participants.

Biomonitoring California Full Project and Laboratory Collaborations*

Study Name	Number of Participants	Population	Catchment Area	Chemicals Being Biomonitored												Dates Samples Collected
				PBDEs	Other BFRs & CFRs	Cadmium	Lead	Manganese	Mercury	PFCs	Pesticides	Phenols, e.g., BPA & Triclosan	Phthalates	PCBs	PAHs	
Full Project Collaboration																
Firefighter Occupational Exposures (FOX) Project	101	Firefighters	Orange County	X	X	X	X	X	X	X	X	X	X	X	X	2010-2011
Laboratory Collaboration																
The Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) Study	49	5-year-old children	Salinas Valley										X			2005-2006

*Excerpt of Table 2

Initial Combined Results from Biomonitoring California Collaborations

- Combined preliminary results from diverse individual studies
  - Additional analyses underway
- Shows chemicals the Program has measured so far in California residents
- Includes detection frequency
  - The percentage of people in whom the chemicals were found

Initial Combined Results from Biomonitoring California Collaborations*

Chemical	Study+	Number of People	Detection Frequency
Metals			
Cadmium	A,B,D	529	61%
Lead	A,B,D	529	100%
Manganese	A,B	452	100%
Mercury	A,B,D	529	97%
Perfluorochemicals (PFCs)			
2-(N-Ethyl-perfluorooctane sulfonamido) acetic acid	B,D,F	203	49%
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid	B,D,F	203	99%
Perfluorobutane sulfonic acid	B,D,F	203	4%
Perfluorodecanoic acid	B,D,F	203	72%
Perfluorododecanoic acid	B,D,F	203	1%
Perfluoroheptanoic acid	B,D,F	203	58%
Perfluorohexane sulfonic acid	B,E,F	137	100%
Perfluorononanoic acid	B,D,F	203	100%
Perfluorooctane sulfonamide	B,D,F	203	83%
Perfluorooctane sulfonic acid (PFOS)	B,D,E,F	236	100%
Perfluorooctanoic acid (PFOA)	B,D,E,F	236	86%
Perfluoroundecanoic acid	B,D,F	203	97%

*Excerpt of Table 3

+See http://oehha.ca.gov/multimedia/biomon/pdf/031612BioCalProgress.pdf, page 15

Looking Forward

- Detailed findings on individual studies will be released in the near future
- Expanding laboratory capability, capacity
- Building capacity to produce data representative of the state's general population
  - Study in Central Valley with adult participants approximately representing regional population
- Findings will inform state programs

CLARIFYING QUESTIONS AND GENERAL COMMENTS

DISCUSSION QUESTIONS FOR UPCOMING DATA SUMMARY REPORT

With regard to the three main messages contained in the materials for the SGP:

- Are these messages useful and appropriate?
- Are there other messages that should be included?

With regard to the "Chemicals that Biomonitoring California Laboratories Can Measure"*:

- Are these groupings of chemicals useful and understandable?
- Should additional information suitable for a technical audience be included – for example, information on method detection limit (MDL)?
- Is there other chemical-specific information that would be helpful to include?
- Any suggested changes to Figure 1?

*Table 1 and Figure 1

With regard to "Biomonitoring California Project Collaborations"*:

- Is this level of detail adequate for the Data Summary Report?
- Is there any other information that should be included?

*Description of Biomonitoring California Project Collaborations and Table 2

With regard to the "Initial Combined Results from Biomonitoring California Project Collaborations:"*

- Is the information in Table 3 useful and clear?
- Is the detection frequency useful to report for the initial combined results?
- Would any other information be useful to include in Table 3?

*Table 3