BIOMONITORING CALIFORNIA

Program Update and Overview of Biomonitoring Surveillance Issues

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Presentation to the Scientific Guidance Panel Meeting

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CDPH California Department of PublicHealth

Center for Healthy Communities
EHIB/Biomonitoring California

Staff Updates

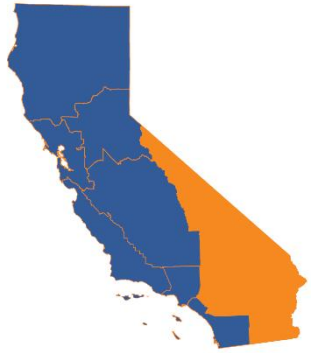
- Staff transitions
  - Goodbye to Christopher Ranque and Lissah Johnson
  - Welcome to Stephanie Jarmul
  - A new role for Duyen Kauffman

- Staff redirections

California Regional Exposure (CARE) Study

CARE-LA

- Spring 2018
- 430 participants
- LA County



CARE-2

- Spring 2019
- 359 participants
- Riverside, San Bernardino, Imperial, Mono and Inyo counties

CARE-3

- Spring 2020
- 90 participants
- San Diego and Orange counties

CDPH California Department of PublicHealth

Status of CARE Study

	CARE-LA	CARE-2	CARE-3
Early notification of metals results	X	X	
Results return	X	X	
Summary data posted to Biomonitoring CA website	X	X	
Public meeting	X		
Publications/reports			

Statewide surveillance

SB 1379

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CDC Current Approach to State Biomonitoring

CDC supports statewide biomonitoring investigations that:

- establish **reference** exposure levels or
- monitor **trends** in exposure for chemicals of concern

based on a state-wide representative sample of the population within the state.

Community-based Studies vs. Surveillance

- Community-based studies can help us understand the exposures of a particular geographic, occupational, or racial/ethnic group.
- The goal of surveillance is to understand chemical exposures across the California population, including exposures unique to the state, and monitor trends over time.
- SB 1379 specifies that surveillance is the priority of the program.

Characteristics of Successful Surveillance

On-going systematic collection, analysis, and dissemination of data

- Representativeness
- Usefulness
- Data compatibility
- Acceptability
- Flexibility
- Stability

Biomonitoring California Values

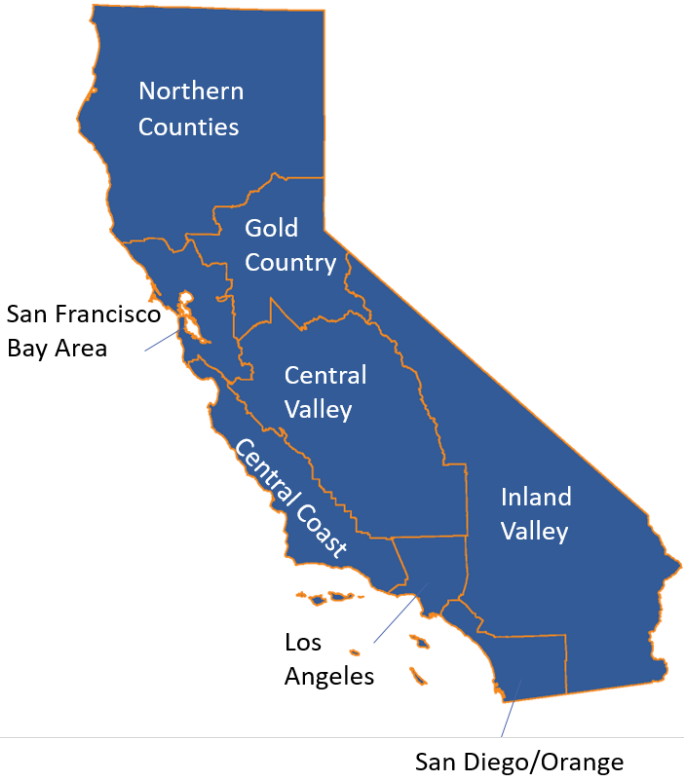
- Environmental Justice
- Statewide and regional interests
- Right-to-Know – providing exposure information, individual results, and study findings

Efforts to Capture Representative Samples

Cal-HANES	Probability sample, modeled after NHANES, never implemented
Biomonitoring Exposures Study (BEST)	Randomly selected Central Valley Kaiser Permanente subscribers
Measuring Analytes in Maternal Archived Samples (MAMAS)	Utilized samples from the Genetic Disease Screening Program (GDSP)
California Regional Exposure (CARE) Study	Region by region coverage of the state. Participants recruited with postcards and outreach and selected to meet quotas.

CARE Study: Initial Concept

- Eight regions, based on geography and population
- Conduct sampling in approximately one region/year, with 300-500 participants per region
- Biomonitoring for metals and perfluoroalkyl and polyfluoroalkyl substances (PFASs) and collection of exposure data
- Potential to include additional panels, such as 1-nitropyrene or environmental phenols

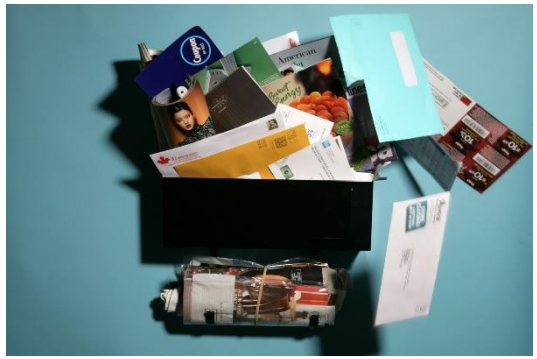


Lessons Learned from Previous Surveillance Work

- Recruitment challenges
- Cost and time demands of field work
- Usability of samples from the Genetic Disease Screening Program (GDSP)
- On-going surveillance requires sustainable funding

Recruitment

- Participation rates for studies generally declining
- CARE-2 postcards sent to 65,000 randomly selected addresses yielded 286 responses
- Follow-up with potential participants is resource intensive



Costs of Field Work

- Travel to field offices
- Temporary office space and equipment
- Sample collection and management
- Phlebotomists and other specialized staff
- Participant incentives

Using GDSP Biobank Samples

- Less expensive per sample than participant recruitment
- Samples available from across the state
- No control over sample collection or management protocol
- Cannot be used for metals analysis
- Limited information on participant characteristics
- No opportunity to return results or gather exposure information

Need for Sustainable Funding

- Surveillance work requires data and sample collection at regular intervals
- Outreach and field work must be planned well in advance
- Staff retention

Sampling Methods

Convenience Sampling	Quota Sampling	Population-based Sampling
Quickest, least expensive recruitment method May not reflect broader demographics and be prone to cluster bias Non-representative study population; cannot generalize findings	Can be used in conjunction with convenience sampling or broader recruitment methods Reflects selected demographics in the population. Can be used to understand particular strata and overall population	Can be costly to pursue selected participants. Uneven response rates may result in study population that does not reflect the larger population. Findings are generalizable, using weighting to compensate for low response rates

Reducing the Scope of Surveillance

- Continue CARE with modifications
- Include a subset of counties or regions
- Collect only urine samples
- Use banked samples for serum surveillance

Option: Continue CARE Study With Modifications

- Decrease field work frequency to one region every 3 years
- Consolidate sample collection timeframe to reduce field presence
- Reduce the number of participants
- Increase reliance on convenience recruitment

Option: Continue CARE Study With Modifications

- Still requires a funding source to support field work
- Changes to recruitment method to reduce costs may result in a study population that is less reflective of overall demographics
- Difficult to compare data collected from different regions at different times

Option: Use external study to identify participants

- Identify potential participants through CHIS or other existing study
- Limit geographic area to 1-2 regions
- Consolidate sample collection timeframe to limit field presence

Option: Use existing surveillance to identify participants

- Depending on how participants are recruited and response rate, may result in a study population that does not reflect demographics of the state
- No biomonitoring in most parts of the state
- Shorter field presence may reduce participation rates
- Funding for field work still required

Option: Conduct PFAS Surveillance Using GDSP Samples

- Conduct probabilistic selection from available GDSP samples
- Draw samples from across the state
- Analyze samples for PFASs (and other serum-analytes as available)
- Seek supplemental funding to conduct community-focused studies

Option: Conduct PFAS Surveillance Using GDSP Samples

- Biobank only represents pregnant women who utilize state screening program
- Requires funding to support purchase of samples
- Serum analytes only – no metals analyses available
- No interaction with participants

Discussion Questions

- What are the priorities of surveillance?
  - For example, would understanding geographic and temporal trends of PFASs in pregnant women fulfill our surveillance mandate?
- What aspects of surveillance are most important to retain?
  - For example, is geographic coverage more important than temporal trends?

Discussion Questions (cont.)

- Which analytes do we prioritize (i.e. which media are essential to collect)?
- Which sampling approach is preferred for surveillance?
  - Probability samples with potentially low response rates
  - Non-probability quota samples that better reflect California's demographics
- What approaches should we consider to evaluate the success of statewide surveillance?

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