



BIOMONITORING CALIFORNIA

Program Update

Nerissa Wu, PhD, MPH

Presentation to the Scientific Guidance Panel Meeting

November 18, 2022

Overview

- Administrative updates
- Project updates
 - Surveillance
 - Community biomonitoring projects
 - Lab updates
 - Communications updates

Staff Update



Dinesh Adhikari	Joginder Dhaliwal	Susan Hurley	Roshni Sarala
Kathleen Attfield	Dina Dobraca	Stephanie Jarmul	Jianwen She
Hyoung Gee Baek	Toki Fillman^	Duyen Kauffman	Dan Sultana
Paramjit Behniwal	Jon Gallardo^	Emilie Kadhim	Andrew Tan^
Kelly Chen^	Songmei Gao	Amber Kramer	Darcy Tarrant
Key-Young Choe	Qi Gavin	Kiera Melton^	Miaomiao Wang
Sabrina Crispo Smith	Ranjit Gill	June-Soo Park	Shizhong Wang
Adam D'Amico*	Cheryl Holzmeyer	Myrto Petreas	Yunzhu (Judy) Wang
Josephine DeGuzman	Amanda Hooker	Martha Sandy	Nerissa Wu
Jagdish Dhaliwal			

*Departing staff,
^New staff

Additional Positions

- Research Scientists
 - Epi/Biostats
 - Chemists
- Toxicologists

For more information, visit:

- <https://www.calhr.ca.gov/Pages/Job-Seekers.aspx>
- <https://oehha.ca.gov/public-information/jobs-oehha>





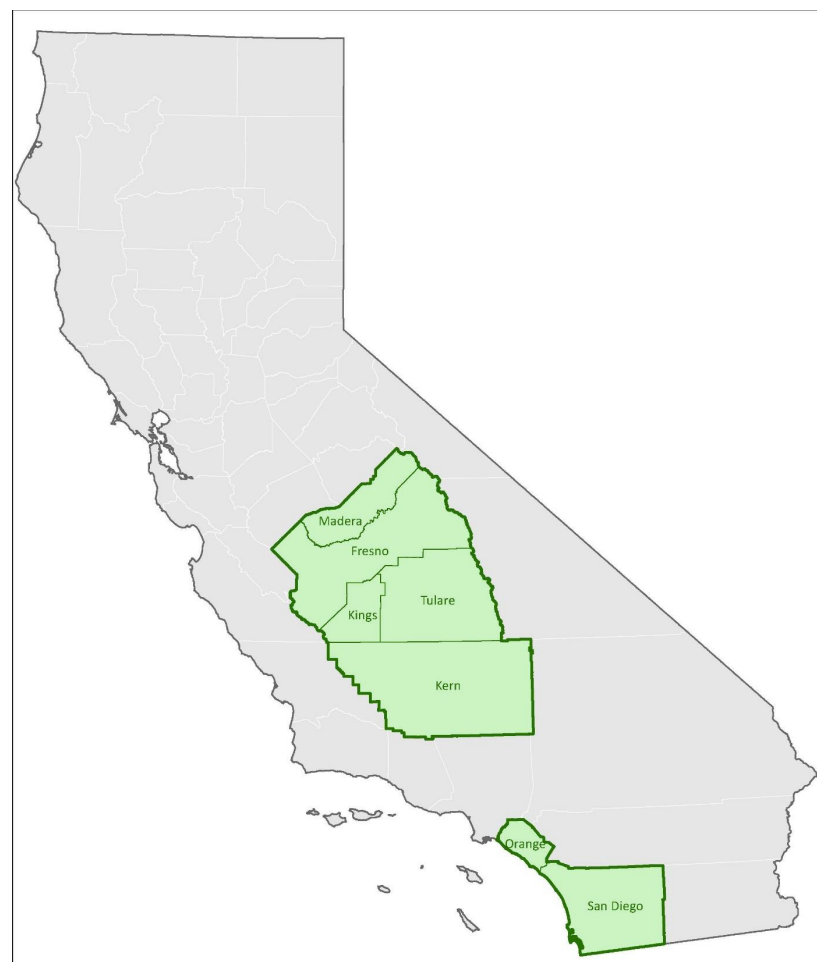
Surveillance Projects Updates

California Regional Exposure (CARE) Study Additional Analyses

- Phenols analysis was conducted for 60 female CARE-LA participants and 150 CARE-2 participants
- Inorganic arsenic data is currently available for 20 CARE-LA participants and 10 CARE-2 participants
- Phenols analysis and arsenic speciation will be conducted on additional samples to enable better population estimates and exploration of exposure sources

Exposure Surveillance Using Banked Samples

- The California Genetic Disease Screening Program (GDSP) provides prenatal screening to approximately 70% of pregnant Californians.
- GDSP archives prenatal samples from Fresno, Kern, Kings, Madera, Tulare, Orange, and San Diego counties
- Prenatal samples from these counties are split into two aliquots (approximately 0.5 mL each) and stored
- Non-Biobank samples are typically discarded after one month, but may be available to us



Measuring Analytes in Maternal Archived Samples (MAMAS)

	Total # of Samples	Pregnancy Year	Source of Samples	Analyses
MAMAS 1	460	2012	San Diego/Orange Counties	POPs* (n=58) PFASs** (n=200)
MAMAS 2	540	2015	Los Angeles County Riverside/San Bernardino Alameda/Contra Costa Northern Counties	POPs (n=245) PFASs (n=295)
MAMAS 3	300	2016	Southern Counties San Francisco/Central North Bay	POPs (n=204) PFASs (n=96)

*Persistent Organic Pollutants (POPs) include polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), and organochlorine pesticides

**Perfluoroalkyl and polyfluoroalkyl substances (PFASs)

Studying Trends in Exposures in Prenatal Samples (STEPS)

- Provide information on time trends and population-based estimates of PFASs in pregnant people for selected California counties
- Conduct both retrospective and prospective sampling to maximize coverage of California

STEPS Challenges

- Limited coverage of California
- Biobank samples are low volume (~0.5 mL), limiting the number of panels that can be run
- Lab can analyze approximately 500 samples per year for PFASs [expanded panel]

Retrospective Sampling (Biobank)

- Include 2 Biobank counties
- Link Vital Statistics birth records
- Include live singleton births, nulliparous individuals
- Select samples from three time points (e.g., 2015, 2018, 2021)

Prospective Sampling (non-Biobank)

- Select one non-Biobank county
- Collect samples from 2024 pregnancies and in 3-year intervals thereafter
- Birth records are not available until 1-2 years post-birth

Tentative Sampling Plan

Sample Acquisition	Location	Pregnancy Year	# Samples
2022-23	County A	2015	166
		2018	166
		2021	166
2023-24	County B	2015	166
		2018	166
		2021	166
2024	County C	2024	500*
2025-26	County A	2024	250
	County B		250
2026	County C	2027	500*

* Approximately 500 samples will be collected; some may not comply with inclusion criteria

Input into Sampling Plan

- Meeting with PFAS researchers and biomonitoring stakeholders to collect input on sampling plan
 - What criteria should be considered in our selection of counties for retrospective sampling?
 - What criteria should be considered in our selection of a county for prospective sampling?
 - Are there additional exclusion criteria we should consider?

Community Biomonitoring Studies

On-going studies:



Stockton **Air Pollution Exposure Project (SAPEP)**



**Biomonitoring Component of the San Joaquin Valley
Pollution and Health Environmental Research Study
(BiomSPHERE)**

Upcoming study:



Filtration for **Respiratory Exposure to Wildfire Smoke**
from **Swamp Cooler Air (FRESSCA)** Mujeres project



SAPEP Current Activities

- Returning results to participants
- Conducting a follow-up air monitoring study at SAPEP school to:
 - Evaluate the effectiveness of upgrading filters in the HVAC system to reduce exposures to fine particulate matter (PM_{2.5})
 - Characterize actual use of portable air purifiers to reduce PM_{2.5} exposures
- Continuing to engage with community partners to plan for dissemination of findings to community and other stakeholders



BiomSPHERE Current Activities

- Fieldwork to begin this month (Nov/Dec 2022)
- Fieldwork includes:
 - Collecting urine
 - Administering exposure questionnaires
 - Collecting air quality samples at participants' homes
 - Conducting personal air sampling for PM_{2.5}
- Sample collection to continue through July 2023



More Information



Details can be found on the Biomonitoring California website

➤ Project pages

- SAPEP: <https://biomonitoring.ca.gov/projects/stockton-air-pollution-exposure-project-sapep>
- BiomSPHERE: <https://biomonitoring.ca.gov/projects/biomsphere>

New!

➤ SGP meeting presentations

- March 2022:
<https://biomonitoring.ca.gov/sites/default/files/downloads/AB617UpdatePlanning032522.pdf>
- July 2022:
<https://biomonitoring.ca.gov/sites/default/files/downloads/CommunityBiomUpdate072222.pdf>



Upcoming Community Biomonitoring Project



CENTRAL CALIFORNIA
ENVIRONMENTAL JUSTICE NETWORK

UCSF

University of California
San Francisco



OEHHA

California Office of Environmental
Health Hazard Assessment



California Department of
PublicHealth

**BIOMONITORING
CALIFORNIA**



CDPH
California Department of
PublicHealth

Center for Healthy Communities
EHIB/Biomonitoring California



Biomarkers of Air Pollution Exposure

Measure urinary biomarkers of air pollutants, including polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs), in order to:

- Improve our understanding of air pollution exposures among residents in Kern and Fresno counties
- Evaluate the effectiveness of residential air filtration at reducing overall exposures to these pollutants

Environmental Health Lab Updates

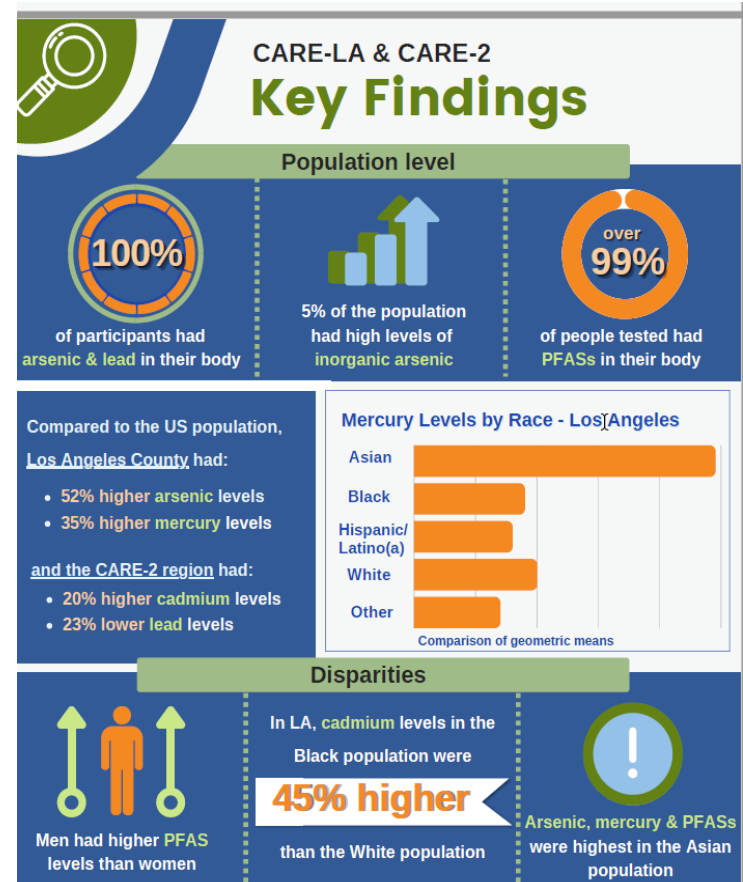
- Conducting additional analyses for the CARE Study
- Continued work on the VOC urinary metabolite method
 - 30 metabolites from 21 parent VOCs
 - Method will be developed and validated in early 2023
- Validation of the speciated urinary mercury method
 - Inorganic mercury and monomethyl mercury
 - Method will be validated in early 2023

Environmental Chemistry Lab Updates

- Validation of extended PFAS method complete
 - 37 analytes with a low (0.01 – 0.05 ng/mL) MDL
 - 7 additional analytes with a higher (0.1 – 0.25 ng/mL) MDL
 - First sample analysis, a comparison of serum vs plasma, in progress

Communications Team Projects

- Finalizing the CARE Report and graphic summary
- Focus on fact sheets and other materials for the general public
- Data exchange for potential research collaborations





ROB BONTA

Attorney General

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Attorney General Bonta Sues Manufacturers of Toxic Forever Chemicals

Press Release / Attorney General Bonta Sues Manufacturers of Toxic Forever Chemicals

9 88. Blood serum data collected by Biomonitoring California illustrate that regardless
10 of the population cohort, six of the seven PFAS at issue in the Complaint are present in the blood
11 of nearly all California participants in all studies. The following studies all had different
12 geographic and demographic populations and found similar results: Maternal and Infant
13 Environmental Exposure Project; California Teachers Study; Firefighter Occupational Exposures
14 Project; Measuring Analytes in Maternal Archived Samples; Biomonitoring Exposures Study-
15 1.Pilot; Biomonitoring Exposures Study - 2.Expanded; Asian/Pacific Islander Community
16 Exposures Project - ACE 1; Asian/Pacific Islander Community Exposures Project - ACE 2;
17 California Regional Exposure Study, Los Angeles County; California Regional Exposure Study,
18 Region 2; and California Regional Exposure Study, Region 3.

19 89. The data are available on Biomonitoring California's website.



BIOMONITORING CALIFORNIA

*Thank you to participants, collaborating
organizations, and staff!*



Questions?