

March 2023 Meeting of the Scientific Guidance Panel for Biomonitoring California

Summary of Input and Recommendations

The Scientific Guidance Panel (SGP) for the California Environmental Contaminant Biomonitoring Program (also known as Biomonitoring California) met virtually on March 7, 2023. This document briefly summarizes input and recommendations received from the Panel, as well as the range of topics discussed with the audience. Visit the [March 2023 SGP meeting page](#) to access the presentations, complete transcript, and other meeting materials.

SGP Panel Members in Attendance

Megan R. Schwarzman, MD, MPH, Chair
Penelope (Jenny) Quintana, PhD, MPH
Lara Cushing, PhD, MPH
Ulrike Luderer, MD, PhD
Carl Cranor, PhD, MSL
Thomas McKone, PhD
Oliver Fiehn, PhD

Application of a Population-based Pharmacokinetic Model for Interpretation of [CARE PFAS Data](#)

[Presentation](#): Matt MacLeod, PhD, Stockholm University

Panel members and the public discussed the following topics with the guest speaker:

- The utility of the population-based pharmacokinetic model to analyze differences in levels of specific perfluoroalkyl and polyfluoroalkyl substances (PFASs) at the population level by sex and over time, and the utility of the model in examining differences among females.
 - The model's assumptions regarding variability within female populations and their PFASs levels due to a range of life course events (including pregnancy, parity, childbirth, lactation, and menopause).
 - The impact of fluctuating body mass index (BMI) on PFASs levels over time.
 - Additional possibilities for testing and validating the model, such as the inclusion of males with regular blood loss and non-menstruating females in the model.
- The relationships among pharmacokinetic mechanistic modeling, biomonitoring, and statistical modeling in exposure assessment.
 - The pharmacokinetic model is useful to identify emerging trends based on current exposure rates. Biomonitoring is needed to identify potential changes in levels of specific PFASs in the body, after exposures have been reduced from restriction or banning of certain PFASs.

- Biomonitoring can also help identify exposure disparities, and highly exposed subpopulations based on geography, race etc.
- Statistical modeling/analyses is needed to interpret biomonitoring data.
- Pharmacokinetic mechanistic models can be used to assess exposures to not only PFASs, but also other contaminants, such as metals and polychlorinated biphenyls (PCBs), which may have different metabolic elimination pathways.
- Possibilities for using more inclusive and empirically specific language to describe gender identities while engaging with this population-based pharmacokinetic model and other Program work.
- Public comments:
 - Dr. Ahimsa Porter Sumchai of the Hunters Point Community Biomonitoring Program commented “Research conducted on elite athletes exposed to air pollution and heavy metals found exercising muscle aids in excretion.”
 - Dr. Gina Solomon of the Public Health Institute provided a comment on the National Health and Nutrition Examination Survey (NHANES) data: “Parity is available for a subset of women who completed the reproductive health questionnaire. Pregnancy status at time of exam is suppressed for women under 20 and over 44 years old.”

Program Updates and Planning

[Presentation](#): Kathleen Attfield, ScD, California Department of Public Health (CDPH)

[Presentation](#): Susan Hurley, MPH, Office of Environmental Health Hazard Assessment (OEHHA)

Panel members and the public discussed the following topics:

- The possibility of using the expanded PFAS method, which allows the Program to measure approximately 40 different PFASs, to assess California Regional Exposure (CARE) Study data.
 - The Program would be limited to analyzing samples of participants who had consented to future additional analyses.
 - The messaging of participant results will be difficult for new/emerging PFASs.
- The expanded PFASs method will be used in the Studying Trends in Exposures in Prenatal Samples (STEPS) study.
 - STEPS is well suited to studying new and emerging PFASs, beyond those covered by the Third Unregulated Contaminant Monitoring Rule (UCMR 3), as it does not include a results return component

- STEPS data may indicate the emergence of newer PFASs that can be correlated with water monitoring data compiled by the Water Board.
- Additional opportunities the Program should consider for assessing exposures to PFASs.
 - CARE surveys collected information about participants' main sources of drinking water (e.g., bottled water vs well water vs public water systems). The Program could examine possible associations between participants' responses and their PFAS exposures.
 - Biomonitoring for PFAS exposures in Tribal communities would be of interest. Though Tribal communities are relatively small, it may be possible to use STEPS data to look at racial identity to examine accumulated numbers and trends over time.
 - Biomonitoring for occupational exposures to PFASs remains important. The Program is collaborating with the Silent Spring Institute (SSI) to investigate occupational exposures using the Asian/Pacific Islander Community Exposures (ACE) project data.
- Investigative questions the Program should consider when using the EPA UCMR 3 data and the Water Board data.
 - California Water Board data could be used to identify hotspots for PFAS exposures (e.g., areas with occupations, activities, or production facilities that could result in high levels of PFASs in the water supply), and potentially highly exposed subpopulations, including tribal communities, and communities who live near ski resorts.
 - Participants should be mapped to their individual water source using water company records, the Water Board data, etc.
- The challenges in designing PFAS surveillance research given the diversity of water distribution systems and water districts in California.
 - Many communities rely on multiple water sources over the course of a year.
- Jen, an audience member, expressed concern over her proximity to a ski resort and potential PFOS levels in her community's watershed. She also asked for any insight into the Water Board's implementation of the new requirement for testing of small water systems for PFOS, as part of the Water Board's [2023 Drinking Water Needs Assessment](#).
 - Panel member McKone agreed with the concern of higher PFASs levels due to proximity to a ski resort, as PFASs are used in many water-resistant skiing equipment, including ski wax, and clothing.
 - The Program mentioned that the Water Board is working on contracts for testing of smaller community water systems, particularly in disadvantaged communities, but they have not yet been enacted.

- Complexities in messaging potential arsenic exposures due to rice consumption.
 - The Program is developing a fact sheet on arsenic in rice, stemming from the ACE and CARE studies.
 - The origin of the rice is often not labeled on packages, and the arsenic levels in each region or country depend on many factors, including soil conditions.
- Interpreting the naphthalene results among participants in the Stockton Air Pollution Exposure Project (SAPEP).
 - The Program should consider agricultural burning and passive tobacco smoke exposures as potential sources of naphthalene.
 - The Program will compare naphthalene levels in week 1 vs week 2 (when there were heavy rains) to see if agricultural burning may be a potential exposure source.
 - SAPEP questionnaires did not include questions about exposure to mothballs, which are another possible source of naphthalene exposure.

Open Public Comment

- Nancy Buermeyer of Breast Cancer Prevention Partners (BCPP) mentioned that there is currently pending California legislation to ban the use of Bisphenol A (BPA) and Bisphenol S (BPS) in thermal paper, including receipts. Data on occupational exposures among cashiers and retail workers would be helpful.
- Submission from Dr. Ahimsa Porter Sumchai:

[SF Lives – Dr. Ahimsa Porter Sumchai](#)

