

March 27, 2014 Meeting of the Scientific Guidance Panel for Biomonitoring California

Summary of Panel Input and Recommendations

The Scientific Guidance Panel (SGP) for the California Environmental Contaminant Biomonitoring Program (also known as Biomonitoring California) met on March 27, 2014 in Oakland. This document briefly summarizes the Panel's input and recommendations on each agenda item and related public comments. Visit the [March 2014 SGP meeting page](#) to view or download the presentations, other meeting materials, and the full transcript.

Program Update

Presentation by:

- Michael DiBartolomeis, Ph.D., D.A.B.T., *Chief of the Exposure Assessment Section, California Department of Public Health (CDPH) and Lead of Biomonitoring California*
- Nerissa Wu, M.P.H., Ph.D., *Chief of the Chemical Exposure Investigations Unit, CDPH*
- Amy Dunn, M.P.H., *Research Scientist III, Safer Alternatives Assessment and Biomonitoring Section (SAABS), Office of Environmental Health Hazard Assessment (OEHHA)*

Panel members:

- Unanimously voted to recommend that the Program pursue a collaboration with the [Genetic Disease Screening Program \(GDSP\)](#), to help optimize the use of state resources and better achieve the goals of the biomonitoring legislation ([Senate Bill 1379](#)).
- Discussed aspects of the GDSP (*Program staff notes shown in italics below*):
 - GDSP approach for prioritizing which researchers or projects receive samples.
 - *The GDSP generally prioritizes researchers/projects on a first come first serve basis with an exception for researchers working on projects related to the diseases for which GDSP screens.*
 - Potential impacts of sample storage and handling, such as freeze/thaw cycles, on the utility of GDSP samples for biomonitoring.
 - *Pilot testing by Biomonitoring California laboratories indicated that GDSP samples are likely suitable for biomonitoring.*
 - Participation rates and geographic and ethnic diversity of the participants in the Prenatal and Newborn Screening Programs.
 - *All hospitals, clinics, and prenatal providers in California are required to offer these screenings. About 70 percent of women accessing prenatal care participate in the prenatal screening and approximately 90 percent of newborns are screened, resulting in a diverse population captured by the programs.*

- Complimented the Program on the launch of the new results database and noted that it makes the biomonitoring data much more accessible to a wide variety of audiences, including the general public, researchers, and other stakeholders.

Public comment:

Ms. Veena Singla of the Natural Resources Defense Council (NRDC) noted the importance of bringing the Program's biomonitoring results to the attention of a wider California audience through avenues like media releases and preparation of brief summaries in formats understandable for the general public. Ms. Singla commented that the new database provides a streamlined, easy way to access Program results, while also noting the importance of including additional context in the database, such as a comparison to NHANES data.

Laboratory Update

[Presentation by Jianwen She, Ph.D.](#), *Chief of the Biochemistry Section in the Environmental Health Laboratory Branch (EHLB), CDPH*

[Presentation by Myrto Petreas, Ph.D., M.P.H.](#), *Chief of the Environmental Chemistry Branch in the Environmental Chemistry Laboratory (ECL), Department of Toxic Substances Control (DTSC)*

Panel members:

- Commented that the initial findings for non-targeted screening are encouraging. Dr. Oliver Fiehn emphasized the importance of carefully choosing and validating the software used in non-targeted screening, to ensure that the number of compounds being considered is reasonable. The goal is to identify true positives, and minimize false positives and false negatives. Dr. Fiehn offered his continuing advice on the Program's implementation of non-targeted screening.
- Suggested a number of approaches for collaboration with other experts on development and validation of non-targeted screening methods, such as:
 - Holding a workshop.
 - Consulting with different research groups to compare non-targeted screening results generated using different approaches.
 - Pursuing development of a laboratory consortium to support the environmental health research and public health needs of the State.
- Commented that the resources and technology transfer that Biomonitoring California has obtained from CDC will help establish California as a center for biomonitoring research.
- Highlighted the non-targeted screening approach as a tool to get at emerging chemicals with structural similarities to the chemicals being replaced.

Public comment:

Ms. Singla of the NRDC suggested expanding the list of chemicals in the Toxic Chemical Finder (TCF) database used by EHLB for non-targeted screening by adding [candidate chemicals](#) that have been identified for DTSC's Safer Consumer Products Program.

Potential Designated and Potential Priority Metals

[Presentation](#) by:

- Sara Hoover, M.S., *Chief of the Safer Alternatives Assessment and Biomonitoring Section, OEHHA*
- Ryszard Gajek, Ph.D., *Supervisor of the Biochemistry Inorganic Group in EHLB, CDPH*

Documents:

- [Potential designated chemical: Chromium](#)
- [Potential priority chemicals: All designated metals not currently listed as priority chemicals \(antimony, barium, beryllium, cesium, cobalt, manganese, molybdenum, platinum, thallium, tungsten, uranium\)](#)

The Panel unanimously voted to recommend:

- Adding chromium to the list of designated chemicals for Biomonitoring California.
- Adding antimony, beryllium, cobalt, manganese, molybdenum, thallium, tungsten, and uranium to the list of priority chemicals for Biomonitoring California.
- That the Program develop methods for antimony and beryllium that meet the Program's quality assurance/quality control (QA/QC) standards.

The Panel deferred making recommendations on barium, cesium, and platinum as potential priority chemicals.

Public comment:

Nancy Buermeyer, of the Breast Cancer Fund, spoke in favor of chromium being recommended as a designated chemical based on chromium's potential for estrogenic effects and on studies showing higher levels of chromium in cancerous breast biopsies compared to the biopsies of women without breast cancer.

Ms. Singla, of the NRDC, spoke in favor of including antimony as a priority chemical based on its wide use in flame retardants or flame retardant synergists for a number of consumer products, including textiles, upholstered furniture, and mattresses.

The Manganese Interest Group submitted written comments (posted on the [March SGP agenda page](#)), which questioned whether a biomonitoring program for manganese is likely to yield useful data and raised issues with regard to interpreting the data. The

comments noted that manganese is a naturally occurring essential nutrient required to maintain human health.

Best Practices for Biomarker Collection, Analysis, and Interpretation: Perspectives from U.S. EPA's Chemical Safety for Sustainability (CSS) Research Program

[Presentation by Jon Sobus, Ph.D.](#) of the National Exposure Research Laboratory (NERL), U.S. Environmental Protection Agency (U.S. EPA)

Dr. Sobus discussed two main themes related to biomonitoring and exposure studies being conducted by NERL at U.S. EPA:

- Better use of existing biomonitoring data in risk assessment. Dr. Sobus and his team have proposed a statistical approach for estimating long-term average exposures from distributions of spot biomarker measurements using intraclass correlation coefficients (see: [Pleil and Sobus, 2013](#)). They propose the approach be used to convert any collection of spot biomarker data into an estimated distribution of individual means that can then be compared to a biologically relevant risk level.
- Better collection of new exposure data, including biomonitoring data. Dr. Sobus outlined the goals of NERL's Exposure Reconstruction (Ex-R) Study: To assess variability in urinary pyrethroid metabolite levels in adults; and to estimate ingestion exposures to selected pyrethroids using an exposure reconstruction approach. Urine (full voids), surface wipes, vacuum dust, food samples, and drinking water samples were collected over a six-week period and analyzed for pyrethroids and pyrethroid metabolites. Participants kept detailed food, pesticide use and activity diaries. Each participant was provided with a detailed instruction manual, and a portable thermoelectric cooler equipped with a temperature logger. Based on this work, Dr. Sobus recommended collecting full urine volume at each void and noting the time of each void. He also stated that participant training was a key factor in success. A future approach being considered is the use of electronic diaries with reminder alarms.

Panel members and Program staff commented on intersections between U.S. EPA and Biomonitoring California activities:

- Biomonitoring California should review and consider the sample collection methods and exposure questionnaire approaches that Dr. Sobus discussed, to inform future Program studies.
- Biomonitoring California will stay in touch with U.S. EPA regarding non-targeted screening approaches and research efforts to improve the identification and/or prediction of metabolites from relevant parent chemicals.
- The Program and U.S. EPA will pursue possible research partnerships, if feasible, such as investigation of biomarker variability.

Public comment:

Lesa Aylward and Sean Hayes of Summit Toxicology, via written comment (posted on the [March SGP agenda page](#)), encouraged the use of Biomonitoring Equivalents (BEs), developed by their group, to help interpret biomonitoring data in a public health risk context.

Open Public Comment Period

Ms. Buermeyer, of the Breast Cancer Fund, thanked the Panel and Program staff for all the work they do. Ms. Buermeyer shared the content of a letter, prepared by the Breast Cancer Fund, asking the Governor for State funding for Biomonitoring California. The letter was signed by a number of organizations that support Biomonitoring California.

