CALIFORNIA ENVIRONMENTAL CONTAMINANT BIOMONITORING PROGRAM

(BIOMONITORING CALIFORNIA)

SCIENTIFIC GUIDANCE PANEL MEETING

CONVENED BY:

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

STATE OF CALIFORNIA

ELIHU M. HARRIS STATE OFFICE BUILDING

GEORGE ALEXEEFF ENVIRONMENTAL HEALTH LIBRARY

16TH FLOOR

1515 CLAY STREET

OAKLAND, CALIFORNIA

AND

ZOOM PLATFORM

FRIDAY, JULY 22, 2022

1:00 P.M.

JAMES F. PETERS, CSR
CERTIFIED SHORTHAND REPORTER
LICENSE NUMBER 10063

APPEARANCES

PANEL MEMBERS:

Megan R. Schwarzman, MD, MPH, Chair

Carl Cranor, PhD, MSL

Lara Cushing, PhD, MPH

Oliver Fiehn, PhD

Ulrike Luderer, MD, PhD

Thomas McKone, PhD

Penelope (Jenny) Quintana, PhD, MPH

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT:

Vince Cogliano, PhD, Deputy Director, Scientific Programs

Cheryl Holzmeyer, PhD, Health Program Specialist, Safer Alternatives Assessment and Biomonitoring Section, Reproductive and Cancer Hazard Assessment Branch

Susan Hurley, MPH, Research Scientist III, Safer Alternatives Assessment and Biomonitoring Section, Reproductive and Cancer Hazard Assessment Branch

Stephanie Jarmul, MPH, Senior Environmental Scientist, Safer Alternatives and Biomonitoring Section, Reproductive and Cancer Hazard Assessment Branch

Martha Sandy, PhD, Chief, Reproductive and Cancer Hazard Assessment Branch

Kristi Morioka, JD, Senior Staff Counsel

APPEARANCES CONTINUED

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH:

Kathleen Attfield, ScD, Chief, Biomonitoring Investigations and Outreach Unit, Exposure Assessment Section, Environmental Health Investigations Branch

Jianwen She, PhD, Chief, Biochemistry Section, Environmental Health Laboratory Branch

Jeff Wagner, PhD, Chief, Environmental Health Laboratory Branch

Nerissa Wu, PhD, MPH, Chief, Exposure Assessment Section, Environmental Health Investigations Branch

INDEX

PROCEEDINGS

DR. COGLIANO: Good afternoon, everyone. I would like to welcome Panel members and the audience to the meeting of the Scientific Guidance Panel for the California Environmental Contaminant Biomonitoring Program, also known as Biomonitoring California. Thank you all for participating and for sharing your expertise and experiences.

The Panel last met on March 25th, 2022. The meeting included updates on the Biomonitoring Program activities that include community biomonitoring studies and a report back on the definition of perfluoro and polyfluoroalkyl substances, which you'll hear referred to as PFASs, which have been discussed at the November 2021 meeting. The Panel, staff presenters, and audience members delved into planning for future program activities, as well as the definition of PFASs.

Key discussion topics included: opportunities and challenges for using Biobank samples from the Genetic Disease Screening Program; expected challenges in interpreting results from the Stockton Air Pollution Exposure Project, which you'll hear referred to by its initials as SAPEP; identifying opportunities for future community biomonitoring studies and biomonitoring surveillance work; and the Biomonitoring Program's

proposal to update the PFAS footnote on the lists of designated chemicals and priority chemicals to remove the moiety requirement which has since been implemented; and plans to consider broadening the PFAS class definition in the future.

A summary of input from the March meeting and the complete transcript are posted on the March meeting page on biomonitoring.ca.gov.

I will now invite Panel members to introduce themselves.

First, Carl Cranor.

PANEL MEMBER CRANOR: Carl Cranor, Distinguished Professor of Philosophy and a member of the Environmental Toxicology Graduate Program.

DR. COGLIANO: Thank you.

Lara Cushing.

PANEL MEMBER CUSHING: Hi. I'm Lara Cushing. I'm an Assistant Professor in the Department of Environmental Health Sciences at the University of California, Los Angeles.

DR. COGLIANO: Thank you.

Oliver Fiehn.

PANEL MEMBER FIEHN: Hi. I'm Professor in the Genome Center -- Professor in the Genome Center at the University of California, Davis.

DR. COGLIANO: Thank you.

Ulrike Luderer.

PANEL MEMBER LUDERER: Hi. I'm Ulrike Luderer. I'm Professor in the Department of Environmental and Occupational Health and Director of the Center for Occupational and Environmental Health at UC Irvine.

DR. COGLIANO: Thank you.

Tom McKone.

PANEL MEMBER McKONE: Hi. I'm Tom McKone. I'm a Professor Emeritus at the School of Public Health at the University of California, Berkeley.

DR. COGLIANO: Thank you.

Jenny Quintana.

PANEL MEMBER QUINTANA: Hi. My name is Penelope or Jenny Quintana. I'm a Professor of Environmental Health at the School of Public Health at San Diego State University.

DR. COGLIANO: Thank you.

And now, I'll hand the floor over to our Chair, Meg Schwarzman, who will provide more details about today's meeting.

CHAIRPERSON SCHWARZMAN: Thank so much, Vince. I'm Meg Schwarzman in the Environmental Health Sciences Division at University of California Berkeley, School of Public Health.

So thank -- first of all, before we get started into this meeting, I just want to acknowledge and thank Ulrike Luderer who stepped in at the very last minute to chair the March meeting, when I was suddenly unable to. And I appreciate your stepping in in a pinch like that.

I want to start by announcing the Panel goals for the meeting. So we're going to hear updates from -- about both Program activities and community biomonitoring studies. And then the Program would like to hear input from the panel and the public about priorities for future work.

After each presentation, as usual there will be time for questions from the Panel and from the audience. So a bit now about kind of logistics for this new format, which is both in person and remote. If SGP members want to speak or ask a question, just raise your hand, like physically raise your hand, and I can see you.

I'll call on you at the appropriate time and you can ask your question or provide your comment. Webinar attendees, who have questions or comments during the question periods can submit them via the Q&A feature of Zoom or by email to biomonitoring@oehha - O-E-H-H-A - .ca.gov. We won't be using the chat function during the meeting, so don't try to ask questions by chat.

And you can just keep the comments brief and

focused on the items under discussion and we'll read aloud relevant comments, paraphrasing them if necessary. If online webinar attendees want to speak rather than provide written comment during the public comment periods and discussion sessions, you can use the raise hand feature in Zoom webinar, because I can't see you, and I'll call on you from using the raise hand feature.

If you are attending in person and wish to comment, you can come to the podium or raise your hand and Stephanie Jarmul who's in the room will call on you at the appropriate moment. And for the benefit of the transcriber, please clearly identify yourself before providing a comment and write your name and affiliation on the sign-in sheet, if you're in the room.

So to get started with our first presentation, I want to introduce Kathleen Attfield. Kathleen is Chief of the Exposure, Surveillance, and Epidemiology Unit, which is part of the Exposure Assessment Section in the Environmental Health Investigations Branch, or EHIB, at the California Department of Public Health.

She will give an update on current Program activities.

(Thereupon a slide presentation.)

DR. ATTFIELD: Just testing to see if you can see my slides.

CHAIRPERSON SCHWARZMAN: That look's perfect.

DR. ATTFIELD: Okay. Wonderful.

PANEL MEMBER CRANOR: Yes.

DR. ATTFIELD: Okay. Thank you.

So good afternoon. Again I'm Kathleen Attfield representing the Program today for overall Program updates.

--o0o--

DR. ATTFIELD: Today, I will walk through several updates on the administrative side of things, our surveillance projects, and updates from our two laboratories that are part of the Biomonitoring California Program.

--o0o--

DR. ATTFIELD: So first to review our budget. You can see on the right-hand side, probably the part that interests you the most, fiscal year 2022 through 2023, how we have the continuation of the budget augmentation for the Biomonitoring California Program. And additionally, the recently signed budget has confirmed the permanent funding addition for air pollution-related biomonitoring work as related to Assembly Bill 617 that passed in 2017.

--o0o--

DR. ATTFIELD: With the budget augmentation, we -- we're very fortunate in being given additional

position authorities. And we've been working very hard over the past year to advertise for and bring in new staff. And that's included new health educators, a health program manager, and laboratory research scientists, manager, and fellows. Our work is not quite done. We still have a number of positions to fill, including research scientist epidemiologist positions, from entry level to branch advisor level, and in the laboratories, research scientists from levels I through III through a supervisor and another fellow.

So I appeal to everyone on the panel and those listening in to our meeting today to either -- to share this information. And those of you that are interested in applying, please check out our CalCareers website for more information.

--o0o--

DR. ATTFIELD: We'd like to welcome those that have been hired since our last SGP meeting. So Amanda Hooker, Emilie Kadhim, Judy Wang, as well as soon to be joining us Ilaria Lentrichia and Amber Kramer.

We are wishing well to Sara Hoover, who has been reducing her time on the Program in preparation for retirement and to staff who have moved on to other positions including Faye Andrews and Salmon -- Simon Ip. So you can see we -- you can see we've had a lot of change

happening within Biomonitoring California. We're really excited about the expanded capacity that we will be having and do have with our new staff members.

--o0o--

DR. ATTFIELD: So to move on to our surveillance project updates. I'll first talk with you about the Biomonitoring Exposures Study. And this was one where over the last few months, we took -- undertook a new initiative to create population-based estimates of the biomarker concentration distributions that we have by working with a survey data consultation company to weight the date to the underlying population of the region.

--o0o--

DR. ATTFIELD: Now, for those who are not familiar with or need refamiliarization with our BEST study. So this was a collaboration with the Division of Research of the Kaiser Permanente Northern California. And this was one of our earlier studies and one of our first initiatives to try to do a more regional surveillance approach for the State to understand population-level exposures.

So it involved a stratified random sample of adult Kaiser members from the Central Valley, which you can see highlighted in green in the map on the left.

--o0o--

DR. ATTFIELD: So I'll be talking with you about the Expanded BEST portion of BEST and that was the larger portion of the study that took place in 2013. It incorporated 341 people and its recruitment had a special emphasis on sampling of Hispanic and Asian Pacific Islander Kaiser members.

--o0o--

DR. ATTFIELD: So the targeted recruitment allows us to create more precise estimates for those groups, but it did mean that overall, study demographics were disproportionate to the underlying population. So to show you that -- aha, the boxes have moved again, but I think we get the idea.

By design, the Asian and Spanish preferring Hispanic groups and rural groups were overrepresented, which the addition of the weighting that we have done helps to correct for that in order to make overall population estimates.

--o0o--

DR. ATTFIELD: These weights have now been applied across all our chemical panels and we have quite a number of them through the BEST study. This includes metals, phenols, quite a number of panels for the pesticides, perchlorate, phthalates, polycyclic aromatic hydrocarbons, or PAHs, the PFASs, polybrominated diphenyl

ethers, or PBDEs, and polychlorinated biphenyls, or PCBs.

--o0o--

DR. ATTFIELD: So we're going to be adding the weighted data to our data portal of the Biomonitoring California website. And so I'd like to show some of the differences to the unweighted data, so that those who are using BEST data for comparisons to other studies can best understand which version is of most use to them. And that is a question we have of the Panel actually is how can we -- how can the Program convey the utility of new weighted data to stakeholders and other researchers.

So here we see how the weighted geometric means are lower than their unweighted values for blood mercury, urinary mercury, and urinary arsenic of the geometric -- yes, the geometric means, as I said.

--o0o--

DR. ATTFIELD: So a little bonus information. Just because of the way that the sampling was done, and the stratifica -- and the stratified design, and the way the weights use the joint distribution by urban/rural, it allows us some better estimates of when we get down into the stratified concentrations by these different variables that we're interested in. So ones where you start seeing some differences between the population are here with the older age group being higher for blood mercury and for the

Asian group with also blood mercury being higher as reflective of the Central Valley.

--o0o--

DR. ATTFIELD: Moving on to an update on CARE-LA and CARE-2. These surveillance projects, like in BEST, we have been weighting the data to reflect overall regional population biomarker concentration distributions. And we've been prepping the weighted data to be uploaded to our website's database. So that has made the -- the ways we are structuring our data portal a little more complicated, which I'll talk about later when I talk about the website updates.

So we are in the draft phases of the CARE report, and -- that we had described at prior SGP meetings and are including some useful infographics like those shown on the right, as well as describing and listing out in tables the demographic trends in the data on age, gender, race/ethnicity, income, and education. So we're very excited by this data product and look forward to it coming out in the fall.

--o0o--

DR. ATTFIELD: Next an update on CARE-3, which took place in San Diego and Orange counties in the beginning of 2020, but was stopped early due to the COVID-19 emergency. For this study, we had a goal of

between 300 and 500 participants and had invited 532 people to participate. But by the time we shut it down, only 90 people had been able to complete the study. So unlike CARE-LA and CARE-2 we do not consider this group of people representative of the underlying population. We consider it more a convenience sample, so we are not weighting the data for CARE-3.

However, we are still making the data available and I'm going to give you a quick description of some of the findings of the chemicals measured, which were metals, PFAS, and environmental phenols.

--o0o--

DR. ATTFIELD: So for the metals, they were detected almost universally. In blood, we saw lead, mercury, and cadmium, and manganese in over 95 percent of participants. And in urine, we saw arsenic, cadmium, and mercury in over 88 percent of participants. In the Biomonitoring California Program, we follow up with people who have levels above a certain threshold for four of our metals to help them identify possible routes of exposure to reduce their exposures. And in CARE-3 we had nine participants with a metal level above a relevant level of concern.

--o0o--

DR. ATTFIELD: For PFASs, it's probably not

surprising to many that we still are detecting them in the vast majority of Californians, and specifically in these 90 participants. On average, we saw seven PFAS. The most commonly detected were PFOA, PFOS, and PFHxS. Their level -- these levels were pretty similar to CARE-LA and CARE-2, and similar to CARE -- the previous CAREs. They're also lower than the national estimates that we see provided in NHANES. And 2017-2018 is the most recent set of years available for NHANES. It's a little temporally different, but the best we can do at the moment.

--o0o--

DR. ATTFIELD: We wanted to update you on one of our big priorities, which is trying to expand our collaborations. And we want to extend the impact of the data that we have. We've been working with the Stockholm Institute with Matt MacLeod on pharmacokinetic properties of PFAS using the CARE data. And most specifically, the first part of the project they've been working on has been looking at the differences in P -- differences or non-differences in peak intakes for PFAS in Cal -- between California and national levels. And we're hoping that that can be presented to the Panel in the fall SGP.

We've been working with the California Water Boards on bringing together CARE biomarker data with drinking water data for PFAS in order to help them with

their processes of creating new maximum contaminant levels for various PFAS.

And lastly, we have been working with the Silent Spring Institute, which is a nonprofit research institute, into occupational exposures seen within the Asian Pacific Islanders projects that we have.

--o0o--

DR. ATTFIELD: And though we are staffing up with recent new funding, we still have lots more data than we can currently attend to. So we welcome the Panel's suggestions for other types of collaborations we can undertake.

--o0o--

DR. ATTFIELD: To update you on our new surveillance work employing maternal serum samples from the Genetic Disease Screening Program, we are in the planning stages where we are able to accommodate the lab analyses of 500 samples per year. And so as one might expect, we've been reviewing a lot of PFAS literature. We've been consulting with PFAS researchers. We've been assessing budgeting timeline and logistical constraints and trying to assess the potential for our work to address different types of surveillance questions.

So we are currently putting more of an emphasis on the time trend aspect of the surveillance work as

recommended by the panel in our last meeting.

--o0o--

DR. ATTFIELD: But we are also exploring an alternate year design, where we can make use of both Banked samples, at which are available for some counties in California, and non-Banked samples, or freshly collected samples, which are available in other counties of California. And this also relates to a difference between the amount of volume of the sample available. So a low volume was Banked and a higher volume with the freshly collected samples. So this allows us in one set of years being able to look retrospectively and prospectively on PFAS trends, but also on our alternate years allows analysis of other types of anal -- analytes that can be tracked in this media of the serum. And non-targeted analyses because of the greater volumes that this represents.

--o0o--

DR. ATTFIELD: We're also reviewing prior data that we have and that the lab has analyzed quite a number of samples from prior years from the GDSP, so, 2012, 2015, 2016. And that's also of different areas of California with 96 to 292 samples.

--o0o--

DR. ATTFIELD: And then, of course, we have a lot

of permissions to gain with our IRB application and our Biobank requests to GDSP. And as recommended by the Panel last time around, expanding our collection of variables and our linkage to potential health outcomes, we're also applying to Vital Statistics to be able to match pregnancies, that are tracked in Vital Stats as well as through the Biobank program. So that's going to be a boon for our surveillance work.

--o0o--

DR. ATTFIELD: So moving on to updates from our two laboratories that make up Biomonitoring California. So first, the Environmental Health Lab out of the California Department of Public Health. They have three methods that are in progress at the moment, VOC metabolites, mercury speciation, and PAHs with the action of transferring to a new analytical platform. Details there if you want the gory details.

--o0o--

DR. ATTFIELD: And then with untargeted analyses, the advancements that have taken place in reference to parent compounds in blood and environmental samples involve the installation of a new Agilent machine, as well as for unknown metabolites in urine of training new staff to use the HPLC/Q Exactive Plus platform.

--o0o--

DR. ATTFIELD: For the Environmental Chemistry Lab at the Department of Toxic Substance Control, the siloxane method that they have initiated on four of these siloxanes listed there is involving the GC-MS/MS and SPME sampling system. They have completed their migration of the legacy method that we've had for 12 PFASs to a newer instrument and that's bringing the wonderful benefits of decreasing analysis time by 50 percent, but also decreasing the necessary volume necessary for the analysis and this has been validated and added to their ISO accreditation.

--o0o--

DR. ATTFIELD: In progress is an ex -- is the optimization of an extended PFAS method. So moving from the 12 standard PFAS potentially up to 43 PFAS here, this includes new to us PFCAs short chain and long chain, as well as new generation PFAS compounds Gen-X, ADONA, F53B, and these three have also been added to the CDC's PFAS method, and in addition, several -- well, many other notable PFAS.

--o0o--

DR. ATTFIELD: For their -- oh, yes, I see. Sorry. In this method, they are trying to modify their serum method, so that they can have an equivalent method for PFAS and plasma. And that's in the early stages, but

pilot results with paired samples are showing the success and plausibility of this approach.

--o0o--

DR. ATTFIELD: So I'm going to end with some information about new resources that are available on the Biomonitoring California website that I hope everyone will go and look into. So our designated chemicals list has been updated. And this is routinely done when the CDC updates their lists of chemicals that they're analyzing for. So we have a fair number of compounds that are listed there, also including several VOCs, and pesticides, and nickel.

I want to especially note that based on the work of the prior March SGP meeting, that that PFAS definition change is now reflected in the designated chemicals list and also in our priority chemicals list. As I noted before, the CARE-3 data is now available up on the website and we have a new CARE-LA lay-friendly study summary that can be found and that's available in English and Spanish.

So with that --

--o0o--

DR. ATTFIELD: -- I will defer to the Panel for any questions that you may have and the public. And I'd like to thank all of our participants and our collaborating organizations for making all of these

projects a success and especially our very dedicated staff.

So thank you.

CHAIRPERSON SCHWARZMAN: Thanks so much, Kathleen. We have 10 minutes now for questions -- clarifying questions from the Panel and from anyone else attending the call. And then we have a longer 25-minute discussion period. So just to break those into two sections, clarifying questions for Kathleen. And if you're a Panel member, I'll see you raise your hand and participants on the meeting can use the raised hand function if they're on the Zoom meeting or present in the library.

I think I saw Oliver, please.

PANEL MEMBER FIEHN: Thank you. That was very informative and congratulations to these acquisitions of new instruments and the transitions to faster turnaround times or short turnaround times. That's great. I wonder in terms of these two untargeted assays, the GC/Q-TOF as well as the LC/Q Exactive. I understand untargets -- untargeted analysis means, you know, we're not very sure what we're looking for, but we hope for the best. But still you need some, how can I say, libraries or ideas what to look for. Is there a concept?

DR. ATTFIELD: I'll need to defer to whichever

laboratory you're specifically interested in. Was that EHL or --

PANEL MEMBER FIEHN: That was mostly for the, for example, the LC/Q Exactive. There was -- you said LC -- HPLC/Q Exactive was purchased and -- there you go. This one.

DR. ATTFIELD: Okay.

PANEL MEMBER FIEHN: So you had a GC/Q-TOF and the staff are being trained. And I wonder if it's a concept or a plan how do to utilize these instruments, specifically the Q Exactive.

DR. WAGNER: This is Jeff Wagner from Environmental Health Laboratory Branch. I don't see Jianwen She on the participants list right now, if you're on Jianwen. He's the Director of this --

PANEL MEMBER FIEHN: Okay.

DR. WAGNER: -- activity. But I can't say that I know that he's been concerned about various, you know, quantitation accuracy issues that have to do with additional metabolites of certain target compounds of interest and looking into that as a way of making things more comprehensive. But I can get in touch with him and have him follow up with you, if you'd like.

DR. SHE: Hi, Jeff.

PANEL MEMBER FIEHN: I see him.

DR. SHE: Jianwen, here.

DR. WAGNER: Great. Sure.

DR. SHE: Yes. Thank you, Professor. You are right. With LC/Q -- thank you, Jeff also -- Q Exactive Plus, library is a bigger issue. And untargeted -- I completely agree with you, untargeted still need to be defined under certain domain and certain things we might know. So for the Biomonitoring Program, we start with build basically the chemical database -- priority chemical database. We also build a database on the environmental phenol group, BP3 groups.

So we try to start with a class-based library build up. But definitely like BinBase database, any commercial database, like some of the database, and software from Thermo. This machine is from Thermo, Thermo's Mass Fontier. Any database we try to learn to build up. So I don't know if that's -- I answer your question or what's --

PANEL MEMBER FIEHN: Yeah, also like offer help if we want to talk about it more on -- offline so to say strategies and what -- I just wanted to raise that.

DR. SHE: Sure.

PANEL MEMBER FIEHN: Congratulations on the instrument, but also happy to engage in discussions.

DR. SHE: Yeah. Thank you very much. We really

learn -- like to learn from your metabolomic centers and the pioneering work you have done, and definitely offline discussion. This is a challenge -- very challenging topics. And then even in our -- at CDPH, we have -- I tried to form MS -- we called it some kind of clubs to bring this issue to discuss. But work with you will definitely be very helpful. Yeah.

CHAIRPERSON SCHWARZMAN: Jenny.

PANEL MEMBER QUINTANA: Hi. Thank you for that update. I had a question about the human subjects approval. Could you just remind me these samples you're getting, the maternal samples, these are not going to have results returned to them, is that correct?

DR. ATTFIELD: That's correct, because we received them in a de-identified fashion.

PANEL MEMBER QUINTANA: But you're going to receive them de-identified and have them linked to the birth record, but all of it -- it's linked, but de-identified, is that what you are saying?

DR. ATTFIELD: Correct.

PANEL MEMBER QUINTANA: Okay. Yeah, because I just -- I do have concerns with non-targeted analysis, because you do -- you are able to pick up drugs of abuse and things like that. So I think there's a -- there's a real issue with -- with that. Especially if the database

is made public, somehow that could be searched by somebody for compounds that you don't report even. So I just do think there's ethical -- ethical issue in finding stuff you weren't looking for which we've run into in our studies just in house dust, finding a lot things.

DR. SHE: Kathleen, may I give a comment on the issue?

DR. ATTFIELD: Of course.

CHAIRPERSON SCHWARZMAN: Of course.

DR. SHE: This is Jianwen.

DR. ATTFIELD: I was just going to acknowledge that, thank you, that's a very valid concern and we'll take it into account for planning.

And then I think Nerissa had a comment for you afterwards.

Go ahead, Jianwen.

DR. SHE: Okay. Yes. The machine -- actually, we called it a full scan issue, but the technology allow us to build an excluded list -- inclusion list, for which we are excluded the target we might have concern, as long as we know which chemical we do not likely to look at. We can tell the machine do not acquire the data on them, do not -- so the un -- complete untargeted can still be guiding this elective, so that the technical comment we might able to solve that issue by the exclusion list or

other technology.

PANEL MEMBER QUINTANA: You'd have to have a pretty complete list.

DR. SHE: Yeah, that's a --

PANEL MEMBER QUINTANA: That's a great -- that's really great that you can do that though. Thank you.

CHAIRPERSON SCHWARZMAN: Nerissa, did you want to add something?

DR. WU: I did. Thanks. Jenny, I appreciate your concern. And this is something we've talked about with -- in relation to samples to which we have participants connected. And it's one of the reasons why we haven't done non-targeted or semi-targeted screening with the CARE study or other participant studies. The other is that I think some of the results are a little harder to explain to participants and so we don't want to have so much uncertainty when we're returning our results to our participants, so these samples offer kind of a unique opportunity, because results return isn't -- isn't a part of it.

PANEL MEMBER QUINTANA: Thank you.

CHAIRPERSON SCHWARZMAN: And just for my understanding, you know, results return has been such a central part of Biomonitoring Program's work and really in pioneering developing those methods, and developing really

helpful information for participants. And I think it's been a big contribution of the Program. But I know that's -- if I understand right, it's partly like established in the -- in the -- when the Program was established.

So have you had to do something to kind of get around that in this situation where the samples are de-identified and there is no possible way to inform participants? I think you've -- I think this has come up before, and so forgive me if you're having to repeat something that we've talked about, but if you wouldn't mind restating it.

DR. WU: Sure. I mean, the requirement of returning results for participants is part of our ethic of our program as well as part of the legislation. So as long as we can, as long as we do have participant identification, we -- we make the results available. In this case, those -- those identities are just not available by policy of the Biobank. Identification is not available. So -- so it's just -- it's just not feasible for us to return results.

That said, you're correct, that we still want to use this as an opportunity to provide education and awareness of environmental exposures. And so we're fortunate we now have a health education group, which is

going to be really focusing on strategies and, you know, who is our audience, and really boosting that part of like how do we get information out to -- it won't be the same participant group, but to stakeholders who might be impacted by these exposures.

CHAIRPERSON SCHWARZMAN: Thanks. I appreciate that. And also, I'm also -- while simultaneously so supporting that work and that effort that's in the ethic and the founding legislation of the Program, I'm also glad it doesn't preclude the Program from using the GDSP samples. So I think it sounds like a nice way to navigate it.

Other questions from the Panel or from other attendees for Kathleen based on her -- or other members based on Kathleen's update?

Kathleen.

DR. ATTFIELD: I was just going to add something to the prior question in that the kinds of studies that the OEHHA group is taking on with various community groups, we still have the ability to develop and refine our results return materials. So I just want to make -- make sure it doesn't sound like we've moved away from it completely as a program.

CHAIRPERSON SCHWARZMAN: Thank you.

Any other questions based on Kathleen's update

about the Program in general and the changes that are being made, the weighted data. If not, we'll move on to our discussion questions.

So we have some time for discussion among the Panel members and anyone attending the meeting around some of the issues that Kathleen raised in her presentation, particularly around the new weighted data. And some things that I think -- so I will -- I'll just mention some things that the Program wants feedback on, but there's also, you know, any comments or discussion points that the Panel wants to raise are fine too.

So one is this question around communicating the new weighted data. So are there -- so how best can the Program convey the utility of that data to a range of stakeholders, other researchers and communities?

The Program also wants input on how the Program can expand the impact of the -- of the biomonitoring study findings for communities and other stakeholders, like where else should this information be going and used by whom, and how can the Program facilitate that. And then finally, Kathleen talked about new collaborations and also the fact that there's more -- more data than available hands to analyze it. And so they're looking for suggestions from the Panel for expanding collaborations on existing projects and to analyze existing data. So any

thoughts on those topics from the Panel members.

And since you're still -- we're still sharing your screen, Kathleen, do you want to put your list of questions up so that people can continue to refer to them?

DR. ATTFIELD: I have them broken across two pages, so I can slowly move between the two. For the question about collaborations, we actually threw in a couple examples, because I know it can be a kind of abstract type of question.

CHAIRPERSON SCHWARZMAN: Then maybe we should start on -- let's start on the first two questions that are on your first slide, Kathleen, and we'll treat collaborations separately --

DR. ATTFIELD: Okay.

CHAIRPERSON SCHWARZMAN: -- since you've broken that down and we can go into a little bit more detail. Any input from the Panel on these two questions?

Jenny.

PANEL MEMBER QUINTANA: I act -- I haven't read your material -- your outreach material, but I don't want to sound crabby or anything, but I think it's important to -- to point out the limitations of weighting. I mean the -- if I remember, the population skewed higher income. And so just emphasizing we'd like to have more studies that were completely inclusive, you know, in the future I

think would be helpful. I mean, not -- not to take away for the huge effort that you did. That was great. But I think we still could do better in terms of really including the most disadvantaged populations in the state. And so I'm not sure if it's worth kind of at some point just mentioning that, that that's our goal -- it's our goal to do that.

And then I'm wondering -- I know you don't have much money, but I'm wondering if it's worth trying to do a few focus groups of maybe even State agencies that work with different populations. So in terms of what do they find interesting about these findings, did they relate to their -- to their populations especially. And I'm just thinking one example of Tobacco-Related Disease Research Program has these institutes that focus on priority populations -- different priority populations. And they could be -- they could see whether the priority populations had found these of particular interest to the community, or something like that, to -- to kind of extend the reach or something like that.

CHAIRPERSON SCHWARZMAN: Ulrike.

PANEL MEMBER LUDERER: Yeah, kind of related to what Jenny was talking about. I recall that for the -- I think for the CARE-LA and the -- let's see, the CARE-2, I guess it's called, studies that you worked with community

groups in the area, you know, to get the word out about the studies. And I'm wondering are there -- you know, one idea might be to go back to those, you know, via those community groups. You know, I don't know whether you would have the bandwidth to be able to -- now with more staff that you're hiring, which is wonderful. I was really happy to hear that to maybe do some presentations, you know, where you can actually go out -- go back to some of these groups that helped with the recruitment and getting the word out to -- to present some of the study results to those communities.

CHAIRPERSON SCHWARZMAN: Kathleen, you're unmuted, which made me wonder if you were going to respond, because I had actually the exact same recommendation as Ulrike did, but also around a question of what are your current interactions with the community groups that you've worked with at the outset of a study with around -- you know, you do results return to individual participants, but what is the current setup or what have you done like in CARE working in terms of communicating results and findings to the community groups that you've worked with?

I'm thinking also of the -- there's some community groups that sent representatives to one of our meetings. It was probably a couple years ago. Anyway,

I'm thinking about that as a different level of results return, rather than individual results, but working with the community groups who have been good partners to find out what education and outreach is useful to them, what the results mean to them and what else might be needed. Is the Program already doing that kind of work, and if not, what does that sound like?

DR. ATTFIELD: Right. For CARE-LA, we did an initial report back to an environmental justice meeting -- a focused meeting of the California Air Resources Board in Los Angeles and invited all the organizations that had supported our work there. And we have had more plans to get back to CARE-LA and CARE-2 community groups. And I'm going to defer to Nerissa on this one, because as you say, now we have some expanded capacity to make good on our intentions.

So, Nerissa, are you -- can you chime in here?

DR. WU: Yeah. Sure. So we did have plans. Our intent was always to hold some kind of public meeting following each CARE region. CARE-2 would have been right when we were in CARE-3. And, of course, that was shut down because of COVID, so now it's an opportunity for us to think about how -- what that might look like now that people are a little more accustomed to Zoom meetings and we have a little more bandwidth as a Program.

We are also, now that we have the lay-friendly CARE-LA document that's been posted that Kathleen mentioned, we are planning on putting something like that together for CARE-2, so we'll have another tool that we can use to -- to bring those results back to the community.

I also want to mention that the ACE Study, which is going back a few years now, we did meet with the community both -- both the broader community, but also our -- our -- the community organization that helped us recruit APA Family Services. And we did that in conjunction with the San Francisco DPH to talk about ways that DPH could then follow up with them and maybe work on some strategies for exposure reduction, but that's something that we have not gotten back to, but it's something we really look forward to with our expanded capacity.

CHAIRPERSON SCHWARZMAN: Great. Thank you.

Tom, did you have a comment?

PANEL MEMBER McKONE: Well, most of what I was interested in has been covered. I mean, the same topic as how to reach out to the communities. I guess the only thing I would add to it is if there are other channels, maybe social media or the -- like the neighborhood groups or something where you could put out the information or at

least put out a link and let people know this data or this information is available, and if they're interested in what's -- you know, what's their exposures to chemicals, there's one way of looking at it.

You know, and again that's a little different channel than working through the leaders, but it's probably -- I mean, a lot of people if you get it in their social network, they'll -- they'll spread it around one to the other sometimes very quickly.

Add, I mean, there's a risk to doing that, that the information could get augmented, or biased, or misinterpreted through those channels, but it was just a thought.

CHAIRPERSON SCHWARZMAN: Kathleen, do you want to go to the next slide that has the expanded thoughts about collaboration?

DR. ATTFIELD: Come one, come all.

CHAIRPERSON SCHWARZMAN: So is this list -- just to clarify, Kathleen, are these -- this is the data that you have or the data that you haven't been able to analyze or just the -- these are described --

DR. ATTFIELD: These are the kinds of initiatives that we've sort of started on, but, you know, not been able to take too far. So they're just projects that are burning a hole in our pockets that might burn holes in

other people's pockets.

(Laughter.)

DR. WU: I think in the previous meeting, we did talk a little bit about this larger data package that we were hoping to come out with, which included all of our studies, all -- it was more of an index of data that we had, but it's a little overwhelming, so Kathleen has distilled it down into sort of a hot topics list, hoping --

(Laughter.)

DR. WU: -- hoping that we'll -- we'll whet somebody's appetite.

DR. ATTFIELD: The metals one we especially highlighted because we had been in conversations with the Minnesota Biomonitoring Program that has had also some arsenic exceedances there. And they've been challenged a bit with how to convey some of the finer points and methods of avoiding particular exposures through rice and fish. So we're -- we're interested in expanding our work to be able to help provide better guidance.

CHAIRPERSON SCHWARZMAN: Lara.

PANEL MEMBER CUSHING: This is more of a question than a helpful suggestion. But, you know, we're all in academic institutions and work with a lot of students, and I'm not -- I'm still getting up to speed as a new Panel

member on all the varied activities of Biomonitoring California, but I certainly work with a lot of graduate students that are hungry for projects and looking for data. So do you have already, you know, internship programs or fellowships, some of the -- you know, the challenges, at least for master's students, you know, they don't -- they're not there that long and so it would have to be a small project, but for PhD students, of course, it could be longer. So do you have -- already have mechanisms to kind of collaborate with students and their faculty advisors, and bring them in to maybe provide -- be collaborators on some of these ideas?

DR. ATTFIELD: We've already -- we've already had a history of working with both master's students and PhD students in the past. And I'm going to defer to Nerissa for like the funding mechanism aspect of it, because I know that's always appealing and a way of bringing more people on. We have set up MOUs with various institutions, if it's going to be a very, you know, large kind of venture. And Nerissa, can I defer to you for further elaboration?

DR. WU: Sure. There are a bunch of ways in which we have worked with trainees from students to graduates. We have EIS and CDC fellows and we have CSTE fellows. But current students, it -- it somewhat depends

on what they're looking for. If it's a capstone project in which we're like an advisor and providing data, we can certainly do that, but it's a little harder if the student is looking for like an on-site work experience, where they'd be interacting with staff. I mean, it's -- the whole workplace has changed. We don't really have an a on-site work presence any more. And we don't actually -- funding for interns is a little harder to come by now. But if somebody's looking for a data-only project, I think that's something that we -- we should talk about.

We have worked with UC Irvine. We've talked -- we've worked with UC Berkeley. So we'd be happy to talk to you more about possibilities of collaborating with students.

CHAIRPERSON SCHWARZMAN: I've had this in the back of mind for a while as a -- something that's kind of -- has been maybe tapped into only piecemeal and wondering if there's a way to -- to make it a little bit more readily accessible and generalizable like -- well, Lara, you could say more if this is -- if you think this is the case with your students. But I get the sense that there's an appetite for some certain number of like data-only projects, right, like there's students at various levels who need data to do their capstone or -- and then anywhere from capstone all the way up to

dissertation. And if it's dissertation, then it has to be a good match with their advisor's work and has to be connected somehow to original -- their original research.

But I wonder if there's a way to kind of facilitate those connections in more than a one-off way. So it would involve like the Program summarizing some of the data or types of data that are un -- as yet, un -- or underanalyzed and pushing those out to some identified group of faculty members, some way to -- to lower the activation energy for making those connections.

And I think it -- maybe it takes an offline conversation between both sides to figure out what has to happen to make that be the case. But it's something I've been sort of trying to see my way through to for a while.

DR. WU: I think some of it depends on what would happen with the data once it's analyzed and how much -- obviously, how much of a role the Program would have to play in that if somebody is hoping to publish the data. Obviously, we'd want to have a fair amount of interaction, if it's really an academic exercise where lots of people might be looking at the data in different ways and it's kept within the academic realm. That's a really different level of supervision or input that we'd need to have.

So, yeah, I would agree that we should talk about this in more of a programmatic way rather than a we happen

to know this one student, because that will help us I think open up the -- open up possibilities. And I think both are actually helpful. I mean one is helpful in more of an academic realm but the other is helpful to us as a Program getting data out, but I don't think it's an either/or situation. We could do both of those things.

CHAIRPERSON SCHWARZMAN: Great. I have Ulrike and then Oliver.

PANEL MEMBER LUDERER: Yeah. Kind of related to the -- the -- what you were just saying, Nerissa, that it -- whether it's going to be published or if it's more of a kind of an internal academic exercise. I mean, I think if we're involving, you know, say a master's student who's doing a thesis, or doctoral student doing a dissertation, then, you know, there's an expectation that it will be published as least, you know, the thesis or the dissertation, so -- and hopefully actually as, you know, in peer-reviewed manuscript -- manuscript form too.

So I think that that probably would be, I think -- my sense is that there would be a lot of students and faculty members who would be interested in -- in doing -- in something like that. So I think working that out up front is really important, you know, things like, you know, authorship and, you know, all sorts of questions that could arise around that.

So I think that is something to really think about, you know, kind of as -- as Meg was saying sort of more generally because I think it's something that will come up multiple times.

Oliver.

PANEL MEMBER FIEHN: Yeah. I would like to encourage also we ought to make this available via public announcements, but carefully crafted language in the sense of, you know, which data or which samples would be available for which purpose, right? So that it's not overarching. It's not like everyone can use everything for everything, but it's clearly like we're -- we're -- the Program would say we would love to do it, but we don't have the bandwidth or the right people. And we think that would be interesting to investigate, but it's not the highest priority perhaps, but it's certainly worth publishing.

So -- so that way you can basically expand your collaborations actually without costs, because many academics wouldn't have, you know, the -- otherwise the knowledge of the data or the samples and they might also not have, you know, the ability to acquire similarly. So it's kind of like -- I think -- I can see it as a win-win for both the public as well as for the Program, as well as for the academics, just saying. But it has to be

carefully crafted, you know, so that people exactly know what they can apply for, or gain access to, or have a conversation with.

CHAIRPERSON SCHWARZMAN: Jenny.

PANEL MEMBER QUINTANA: Hi. I had two comments and a question. The first comment relates to what we're talking about with students or anybody. The CDC biomonitoring data has a whole process for asking permission to use it for a thesis. And a lot of students have done -- used it for a graduate thesis or dissertation, so they have a whole process in forms, and procedures. And you maybe could look at those rather than trying to reinvent that procedure.

And also making sure timelines are very clear. If you -- if you need to approve their thesis and it takes six months, they need to know that ahead of time, you know, in case they want to graduate, that kind of thing.

And I'm forgetting my other comment.

Oh, my other comment was for the slide that's shown here, you're mentioning interest in difference by race/ethnicity, but I would also really recommend that you look at differences by income, as well any time you look at race/ethnicity, in terms of disparities as well, just to add that. You probably meant that as well, but just to make that more explicit.

And then I also wanted to know -- and I probably should know this already and I apologize, but are -- is it ever a possibility to propose studies, so this would be probably a proposed study with additional funding obviously, that recontacts participants. And I'm -- I mean a simple example might be the Asian American population with high blood mercury, a dietary questionnaire asking about fish consumption, but also what parts of the fish. There's cultural differences and eating like the head or the whole fish or something. And I'm just curious if that's ever a possibility -- and I probably, you probably discussed this already, but apologize -- to do further analysis of data.

DR. ATTFIELD: I'm going to not answer the gist of your question, but the context of your question, in that we actually do have that information already. It wouldn't involve a recontacting. So that's something that is also of matter of we'd like to return to it as soon as we have some new research scientists on staff or collaborators who are particularly interested in those questions. We have like what type of fish you've been consuming, what parts of the fish, and -- I've looked at some of that and the parts of the fish are definitely interesting for PFAS, but, you know, that's a teaser to throw out there.

As far as recontacting goes, Nerissa, I'm going to defer to you, because that's not been a general practice of the Program unless really necessary.

DR. WU: We haven't. I mean, you could go back. We'd have to go through an IRB amendment. And I think it -- it's not out of the question, but I think we'd want to think about how old those data are or, I mean, how long ago those participants were involved with a project of ours, for example, ACE 2016-2017. We'd be recontacting people after quite a long period of time. So I would think we would want to think carefully before we -- we reach out to people again.

But -- but again, like if it's something about going back to CARE, that's a little more recent, I think that would be more -- more feasible. I'm just thinking from a -- both because we lose people, you know, they move and are harder to follow up on, but also just because their memory of the study may have faded by the time we contact them.

But the ACE questionnaire was quite rich. It's on our website. We asked a lot of questions that we would not normally ask in an exposure questionnaire.

PANEL MEMBER QUINTANA: It was probably a bad example, because I was just trying to give an example of something you might you want, which your already have.

But do -- does your current consent form include any language about recontact, because we've kind of started including a question in our questionnaires like would you -- if there's a future research study, would you agree to be recontacted if you -- if we want to do some further research on this study, would you agree to be recontacted. And a lot of times people are very happy and interested to participate. But without having that permission, it would have been harder for us to get permission by the IRB to -- to follow up on some participants. So I'm just kind of curious what the questionnaire said or what the consent form says.

DR. WU: We do not currently have that in our consent form. If you remember when we first started talking about the CARE Study back when it was the multi-regional study, we did think that maybe longitudinal follow-up would be -- would be a part of it, that maybe we would -- we would be able to write that into a consent and into the study design. It didn't happen. But that is -- that's a good suggestion.

We've also thought about adding some other things like can we pool your study and then, you know, just expanding the informed consent to give us a little more latitude with what we do with the samples or with the data. So that's a good suggestion.

DR. ATTFIELD: We do ask of our participants if they would consent to further analyses of their samples down the road.

CHAIRPERSON SCHWARZMAN: I want to take this moment to check with Cheryl if there's any public comment in this section, anything that's come in on the email or the website.

DR. HOLZMEYER: So there's -- I don't see anything in the Q&A, but a while ago there was a raised hand by John Gallardo I believe. I don't -- sorry. I don't know that's still relevant. If so, please raise your hand.

Okay.

CHAIRPERSON SCHWARZMAN: And then I'll check with Stephanie about anybody in the room.

MS. JARMUL: No comments from the room at this time.

CHAIRPERSON SCHWARZMAN: Okay. Thank you.

Then I want to just give it another moment. We're -- we have another seven minutes before we have to move on, so I want to give another moment to see if there's any comments or feedback in this conversation, this set of topics, before we move on to our next presentation. So anything from the Panel on what we've been talking about or something that we haven't talked

about yet, but with regard to these questions from the Program.

And if not, then we will go ahead and move on.

Jenny, maybe you could lower your hand just to keep it clean.

PANEL MEMBER QUINTANA: Sorry.

CHAIRPERSON SCHWARZMAN: And we'll move on to our next presentation.

(Thereupon a slide presentation.)

CHAIRPERSON SCHWARZMAN: So for our next presentation, I want to introduce Susan Hurley. She is a Research Scientist in the Safer Alternatives Assessment and Biomonitoring Section of OEHHA. Susan will provide an update on current community biomonitoring studies and on planning for future biomonitoring studies. And we'll do the same thing with a presentation by Susan and then 10 minutes questions, and open discussion, and input after that, including some questions for us as a Panel.

MS. HURLEY: Okay. Thank you, Meg. Can everybody -- I hope everybody can hear me okay with my mask on.

Yeah. Okay.

--o0o--

MS. HURLEY: So today I'm going to be giving an update both on our current community biomonitoring studies

as well as laying out some of the thoughts we have for planning our future studies.

--o0o--

MS. HURLEY: So I will start with our Stockton Air Pollution Exposure Project, also known as SAPEP. I know a lot of you have heard about this before in prior SGP meetings --

--o0o--

MS. HURLEY: -- but just to remind you of what the primary objectives of this study were -- or are. First, it is to learn more about air pollution exposures to school children in Stockton and then to evaluate the effectiveness of school air filtration at reducing those exposures.

--o0o--

MS. HURLEY: So the fieldwork for this study was completed at the end of last year in December. It was conducted at a school in Stockton over the course of two consecutive weeks in early December. The sampling and the fieldwork was done the Monday and Tuesday of the weeks of December 6th and December 13th. And as part of that fieldwork, we collected urine samples, for biomonitoring as well as air quality data and survey data on exposure information to help inform the interpretation of the biomonitoring results.

--o0o--

MS. HURLEY: So the urine samples have now been analyzed for metabolites of polycyclic aromatic hydrocarbons, or PAHs, also for stable metabolites of the volatile organic compounds, VOCs, and we've also measured metabolites of nicotine to account for smoking exposures.

The samples have also been analyzed for a select number of biomarkers of oxidative stress and inflammation. And so right now, we are conducting the descriptive analyses of the biomonitoring data in preparation for preparing our results return packets to the participants of the study.

So today, I won't be presenting any of the biomonitoring results as we can't -- we can't present any of the summary findings until we return the results to the participants.

--o0o--

MS. HURLEY: So what I will be sharing today is on some preliminary data on our -- the air quality data that we collected. And we collected information on a number of different pollutants. But today, I'm just going to be sharing some of the results around fine particulate matter or PM2.5 and the black carbon data.

--o0o--

MS. HURLEY: So information on these pollutants

were collected through the placement of measurement devices co-located at six different sites throughout the school, including two in outdoors on school grounds, and then four indoors including two classrooms that we installed portable standalone air filtration units in and two classrooms that did not have these air filtration units.

--o0o--

MS. HURLEY: So we used -- for the air filtration, we used the IQAir HealthPro Plus. These IQAir units are certified to filter almost a hundred percent of particles greater than or larger -- I mean, larger -- greater than or equal to three microns in size. The teachers were instructed not to turn off the IQAir filtration units.

--o0o--

MS. HURLEY: And then this shows the six locations of the monitoring devices. So it's got -- let me see if this pointer works. The two outdoor locations and then these are the four classrooms. And just note that the classrooms that have the IQAir filtration are classrooms 3 and then classrooms 4.

--o0o--

MS. HURLEY: The PM2.5 was measured by PurpleAir monitors. These provide continuous real-time PM2.5

measurements by utilizing two laser particle counters, which then estimate the particle mass by light scattering. And the data is logged at two-minute intervals.

And prior to deployment, the sensors were calibrated to a local federal regulatory monitor. And these sensors are still at the school and continue to operate and provide publicly available data on the PM2.5.

--o0o--

MS. HURLEY: The black carbon was measured by aerosol black carbon detectors. These provide real-time black carbon concentrations at one-second intervals and it's based on an optical reading of the particles collected on a glass fiber filter.

--o0o--

MS. HURLEY: So the results I'm going to be sharing today, these are preliminary analyses of the PM2.5 and black carbon data focused only on week one. And I'm only showing week one because it rained in week two. It rained a lot, so it really cleaned out the air and those data are likely to be much less informative than the week one data.

I'm also restricting these analyses to the time period 8 a.m. Monday through 3 p.m. on Tuesday. And that's just because it takes a while to set up these devices. They weren't all deployed at exactly the same

time, so that is the time interval during which we have contemporaneous data for both PM and black carbon. And then prior to analyses, the measured data were converted to hourly averages.

--o0o--

MS. HURLEY: So these preliminary analyses include both an evaluation of the temporal trends in these two pollutants, as well as a comparison of the air concentrations in classrooms with and without the IQAir filtration and also in comparison to the levels measured outdoors.

And I just want to take a moment to give a shout-out and a huge thanks to McKenna Thompson, who is a UC Berkeley MPH student who's been interning with us this summer. And she's really the one who took the lead on these analyses and created all the plots that I'll be showing today. And then I'd also just like to acknowledge Rebecca Sugrue who is also at UC Berkeley. She's finishing up her doctoral degree. And she did a lot of the processing of the data collected by the black carbon monitors and she's also helped us with some of the interpretation of the findings.

--o0o--

MS. HURLEY: So this first slide shows the hourly averages for Monday at 8 a.m. through Tuesday 3 p.m. And

the gray areas show supposed to be hours of when school is in session. So that will be important later on when we integrate these findings with the biomonitoring data, because that's when the kids will be there.

And, let's see, so basically you can see this is just the outdoor levels and it shows higher levels in the evening which is typical of the winter pattern that you see in this region in the valley. And then looking indoors, you see a very similar temporal pattern. Although, the levels are lower than what's seen outside. This is the classrooms without the IQAir filtration. And then when we look at the levels in the classrooms with the IQAir filtration, we generally see the lowest levels in those classrooms but we do see this weird sort of high blip on the first day in the afternoon. Also, we do -- it's worthy of noting that we see the biggest differences in the overnight hours.

--o0o--

MS. HURLEY: So for black carbon, we see a really similar pattern outdoors, where the levels are highest in the overnight hours. We see consistently lower levels indoors. This is with -- with no IQAir and then the lowest levels are in the classrooms with the IQAir filtration and we don't really see that same high blip in black carbon that we saw with the PM2.5.

--o0o--

MS. HURLEY: So this is just another snapshot of the data showing the distributions of the PM2.5 across the three different locations. And it -- you can see that the levels are highest outdoors and lowest in the classrooms with the IQAir filtration. And the medians were statistically different across these three locations.

--o0o--

MS. HURLEY: And again, we see the same -- same general pattern with black carbon, where we see the highest levels outdoors and the lowest levels in the classrooms with the IQAir filtration.

--o0o--

MS. HURLEY: So just to summarize briefly, the findings of -- you know, are -- these are preliminary findings, but we do see that levels of both these pollutants were higher outdoors than indoors, that the air quality was improved in classrooms with IQAir filtration compared to those without. PM2.5 median levels were 22 percent lower and black carbon were -- median levels were 54 percent lower in the classrooms with the IQAir filtration.

--o0o--

MS. HURLEY: So for SAPEP our next steps in addition to, you know, drilling down more deeply into some

of these air pollution air quality data is we are working to prepare the packets with the kids' individual biomonitoring results, so that we can distribute them to parents this fall. In the fall, we also are looking to give presentations at community meetings to disseminate the initial study findings. And we also are working to do the descriptive analyses of the biomonitoring data, so we can get those data posted on the Program website. Then we need to do the -- you know, a full integrated analysis of the biomonitoring, the air quality, and the questionnaire data to really comprehensively evaluate and address the project's primary research questions. And then, you know, down the road, we will be disseminating the final study findings to relevant stakeholders.

--o0o--

MS. HURLEY: So the other community biomonitoring study that we're currently conducting is BiomSPHERE. And this is a biomonitoring study where we added biomonitoring onto an existing exposure study, in this case SPHERE. And SPHERE is a -- funded by the California Air Resources Board, CARB. The PIs on it are Asa Bradman from UC Merced and Betsy Noth from UC Berkeley.

--o0o--

MS. HURLEY: And the objective of SPHERE is to assess the exposures to air pollutants and noise among 90

parent-child pairs living in Fresno and in Stockton. And it includes household air monitoring and sampling for selected criteria air pollutants, including black carbon and VOCs. Also will -- also includes personal air sampling for PM2.5 among the adult participants in this study. And it's also including information on noise and using a questionnaire to collect additional exposure survey data.

--o0o--

MS. HURLEY: So BiomSPHERE then has -- under BiomSPHERE all SPHERE participants will be invited to provide urine samples. And those urine samples will be analyzed for the same suite of chemicals that are biomarkers that we're measuring in SAPEP. So it will include metabolites of PAHs, VOCs, and nicotine, as well as some biomarkers of oxidative stress and inflammation. BiomSPHERE also -- BiomSPHERE also will support some additional air sampling that will help us interpret the biomonitoring results.

So the fieldwork for this is scheduled to begin next month and will continue through next spring, so it will span all seasons. And then we expect the biomonitoring results to be available some time in 2024.

--o0o--

MS. HURLEY: So that's -- those are our current

studies. And those both -- well SAPEP and BiomSPHERE were supported by one-time funding. Now, the good news since we last met is with the signing of the State budget earlier this month, we now have ongoing contract funding to support doing more of these community biomonitoring studies in communities that are heavily burdened by air pollution.

So the State funding allocates $350,000 a year in annual contract funding, which can be used to support academic and community partnerships to help conduct these studies. So -- and then the funding can also be used to support the measurement of analytes that Biomonitoring California labs don't currently have the capacity to measure.

--o0o--

MS. HURLEY: So for this fiscal year, you know, we just found out we got the funding for sure, a couple weeks ago. We're under a very short timeline to develop a study, you know, write the contract, get it executed, so we can launch it before the end of the fiscal year. So we've been focusing on finding existing air pollution studies that we could add biomonitoring onto, so much like the approach we used in developing BiomSPHERE.

--o0o--

MS. HURLEY: So in looking for such

opportunities, we have been focused on identifying studies -- ongoing research studies that focus on underserved and heavily burdened communities, that expand the Program's geographic coverage, that have community engagement activities already in place, that are collecting complementary air exposure and health data -- and/or health data -- and that offer the opportunity to provide results that are actionable that can be translated into avenues to reduce exposures or information that can help inform that anyways.

So our process for identifying, you know, these -- an existing research study that we can add biomonitoring to has really just involved us keeping our -- our eyes and our ears open and, you know, directly reaching out to scientific colleagues and community based organizations who have an interest in air pollution. We've been reaching out to colleagues, such as folks at CARB who may not be actively engaged in air pollution research projects themselves, but may be aware of projects that would offer good collaborative opportunities for biomonitoring.

And we've also been having discussions at public forums, such as this one, to solicit ideas for these short-term planning efforts. And at our last SGP, a number of you offered some ideas, and we've been following

up on those, as well as some others, and we think we have a few -- a few good potential prospects for this fiscal year and possibly the next.

--o0o--

MS. HURLEY: Now, looking further down the road, we -- you know, we will continue to look for existing studies that we might add biomonitoring onto, but we really want to develop a little bit more of a systematic long-term strategy. So we're planning to develop a Request for Information, which the goal would be to identify opportunities for these future biomonitoring studies and our -- it's likely that we would issue this in 2023, so that it could help develop the studies that would be supported by contract funds probably starting in 20 -- fiscal year 2024-25.

--o0o--

MS. HURLEY: So just thinking a little bit more about the RFI, we just started having some discussions about what this might look like. We have done -- the Program has done prior RFIs, but that was a number of years ago. About 12 years ago, we issued an RFI that was aimed specifically at academic researchers who were collecting or had recently collected blood or urine samples from California residents. And that RFI was designed to identify those studies where the Program's lab

could then add biomonitoring to those studies. And the goals were really to -- of that RFI were to support ongoing epidemiologic or exposure assessment studies by enhancing their studies with biomonitoring data and also to provide the Program with additional data to support its goals.

--o0o--

MS. HURLEY: So now this RFI that we're talking about now for our community biomonitoring studies is really a little bit of a different thing here. In addition to soliciting ideas from academic researchers, we really want to get ideas from community leaders and organizations. We also while -- you know, the primary focus would be to identify projects that address air pollutants of concern, I think we all recognize the importance of evaluating those exposures in the context of cumulative impacts of other environmental stressors. We are interested in getting information on projects that address other environmental concerns beyond just air pollution.

And I think we -- well, we want to both collect information or ideas that would help us design a new biomonitoring study like we did with -- in developing SAPEP, as well as continuing to identify studies where we might just add on a biomonitoring component to an existing

study.

So as a Program, as I said, we're just in the early stages of thinking about the development of the RFI. And this is something, you know, we'd like if anyone in the Panel -- on the Panel and in the audience has ideas of what that process and the product might look like, we would love to hear about it in the discussion session later.

--o0o--

MS. HURLEY: So then this is -- this is just sort of how we see things unfolding over the next several years. I know there's a lot information on this slide, but the point is to show sort of there -- there are many steps involved in developing these studies and they take time to plan and to execute.

Let me start by just walking you through how to read this figure. So this column over here just goes through the -- generally what the steps are involved in developing these studies. And then going across are the -- the fiscal year -- each column represents a new fiscal year of funding.

So the -- just generally, the steps involved, you know, first, we need to explore potential collaborations. You know, in the short term we're doing that through, as I said, reaching out to -- to researchers who are conducting

existing studies, but ultimately we're thinking we'll use an RFI to do that. Then once we find out -- you know, get a sense of some good opportunities, then we need to choose the project that we're going to move forward with. And then a lot of the work comes next in this development phase where we need to figure out all the sampling scheme, the fieldwork protocols, develop IRB protocols, and write the contract, and get it executed and -- but by the end of the fiscal year so we can initiate the fieldwork.

So for this -- the -- for last fiscal year, this is -- this is BiomSPHERE. And we now have the first three steps all done and we are about to initiate the fieldwork next month. And then we expect that study to be done in June of 2024.

Then for the fiscal year that we just began, as I said, we're in the progress -- in progress for exploring potential collaborations. We're hoping to identify a project partnership later this summer. And then we'll spend the fall developing the study protocol and all the things that go along with it, as well as the contract, so that we can get out in the field next spring. And then that study would finish in June 2025.

And then for the following year, fiscal year 23-24, we'd probably continue to employ our short-term strategy of finding existing studies to add a

biomonitoring component onto, while we also would be developing this RFI. So releasing that sometime next year, so that we could use that then as a tool for our longer-term planning starting with -- to develop studies that are supported by fiscal year funding in 24-25 and beyond.

And then just -- I just want to note that this is a -- it's a little bit of an oversimplification. It shows one study being conducted with each year of fiscal year funding, and each being -- each project being about two to three years in duration. That is pretty ambitious. And we are looking for ways to combine some of the fiscal year funding, so that we might launch a new study every two years or so and extend the duration. But that's sort of a general picture of where -- how we're seeing things unfold over the next few years.

--o0o--

MS. HURLEY: So that's all I have for now. Thank you for your attention and I'd be happy to take questions.

CHAIRPERSON SCHWARZMAN: Thanks so much for that update, Susan, and congratulations on the funding. It's exciting. And it's going to be exciting to see what comes of it over the next bunch of years.

So we have time now for questions, like clarifying questions, for Susan from the Panel and from

all attendees.

Carl.

PANEL MEMBER CRANOR: Yes. Thank you. I think the -- it seems to me the study you're doing is terribly important. At least some of the things I've read suggest that the Central Valley is one of the worst places for air pollution around.

I'm wondering to what extent do you have an understanding of the general health -- adverse health effects from air pollution before you start your study - that's question one - for both children -- you're looking at children, but maybe you have some idea about adults. It turns out it looks like air pollution is a -- a universal contributor to several different disease endpoints. And gee, it would be great as a result of your work to identify, you know, some of these adverse effects. I was struck that you're going to be considering heavily burdened groups.

And that raises a question who are you studying now? The students are from what kinds of socioeconomic groups? Are they heavily burdened or not or, you know, are they -- are they well-off people from Stockton or are they burdened people from Stockton or whatever?

Anyway, that's a collection of questions I think that your study raises. And I would be interested in any

answers you can give. Maybe not on your -- not down your pipeline exactly, but I think it's very -- potentially very interesting study.

MS. HURLEY: Yes. So thanks for those questions. I think to answer your first question about health, yes, you're right, the valley is very heavily burdened by air pollution and they also rank -- you know, Cal -- by CalEnviroScreen, they have some of the highest asthma rates. I think it's the top five percent. A number of the health indicators in CalEnviroScreen have indicated a very disproportionate burden of health -- adverse health in the community.

Now, our study is, you may recall, the actual participants, we only have 18 kids in our study. We're not going to be able to look --

PANEL MEMBER CRANOR: Sure.

MS. HURLEY -- at the health effects, you know, within our study, but we will be able to -- you know, we'll be able -- hopefully, we will be able to show the degree to which air -- school air filtration may help protect them from, you know, the air pollutants or not -- I shouldn't say protect them, protect them from -- lower their exposures.

PANEL MEMBER CRANOR: Yeah.

MS. HURLEY: And then in terms of who's in our

study, the -- we do have information on their socioeconomics. I don't have the numbers off the top of my head, but I -- it's heavily burdened. I mean, it's a disadvantaged community. I do recall the principal saying that it was -- the majority of kids qualified for school lunches. It's -- primarily, it's -- I think it's about half Hispanic. And -- yeah, so these are -- despite it being -- it is a parochial school. It is not like a prep school. You know, it's --

PANEL MEMBER CRANOR: Uh-huh.

MS. HURLEY: -- it is designed to reach kids who are disadvantaged. Yeah. Did I -- did I hit all -- did I both your questions.

PANEL MEMBER CRANOR: You hit some of them. I have few -- I have a couple more.

(Laughter)

MS. HURLEY: Okay.

PANEL MEMBER CRANOR: Asthma would be something that would show up with children, but it turns out -- and I know this is outside your pay grade, outside -- outside California's pay grade perhaps. But air pollution has a very -- quite adverse effects apparently, of course, on lung diseases, cardiovascular disease, diabetes, strokes. And if you could find somebody to pair with you, it might be worth checking with adults and see -- you know, see

what the -- any connections there. I know that's outside what you're doing. But it -- at least I'm learning naively air pollution is a nasty substance.

MS. HURLEY: Yeah. Yeah. And I think, you know, one of the things that our study can also provide is, you know, clearly we can't look at health outcomes directly in our study, but we are -- you know, we left those PurpleAir monitors behind, and so those are going to continue to provide more detailed data about the exposure levels in this community. And there's only one regulatory monitor that -- in the area. And, you know, previous research has shown the importance of these hyperlocal exposures that aren't necessarily captured by that -- by that -- those monitoring data. So, you know, we're -- we're contributing little pieces to the puzzle, I guess.

PANEL MEMBER CRANOR: Sure. Sure. One more quick question, if I might. I think there's a Harvard study or people connected to Harvard that suggest that the current EPA standard is maybe not woefully, but substantially inadequate. And I'm wondering what your seeing in terms of the general monitoring of the community and what the concentration of air pollutants is? It's a good thing your filters work.

MS. HURLEY: Yeah.

PANEL MEMBER CRANOR: And I'm wondering, I guess,

if you pull the exposures down to the extent the filters will, how well off are the kids in the classrooms for example? How well off could people be made in the community, if they had analogous filters?

MS. HURLEY: Right. Yeah. I can tell you that during our study, the levels of PM2.5 were below the federal regulatory standard. I think not much lower, but a little lower. But typically in this area, they -- they have quite a few exceedances of the PM2.5 level. And I don't think -- I -- I don't know. I don't think there is any -- and someone on the call might know, but whether there are any recommended levels for indoor exposures.

PANEL MEMBER CRANOR: Um-hmm.

MS. HURLEY: I don't think that there are, but I think there might be a movement to develop those. But, yeah, good points.

CHAIRPERSON SCHWARZMAN: Thank you.

PANEL MEMBER CRANOR: Thank you for answering the panoply.

CHAIRPERSON SCHWARZMAN: Jenny.

PANEL MEMBER QUINTANA: Just a couple suggestions. A minor suggestion I'm sure has already occurred to you is that black carbon presumably has only outdoor sources, whereas PM2.5 has outdoor and indoor sources. You could ask the teacher what they were doing

at 3 p.m., jumping around doing the hokey pokey or something to make that thing rise.

(Laughter)

MS. HURLEY: Yeah.

PANEL MEMBER QUINTANA: But -- so I think that, you know, it's really encouraging that the black carbon, you know, is reduced so much. And did you leave the air filtration devices in place?

MS. HURLEY: At the school, you mean afterwards?

PANEL MEMBER QUINTANA: At the school afterwards.

MS. HURLEY: Yes, we did. We did.

PANEL MEMBER QUINTANA: Okay. So then you'll have continuing data on the PM on the PurpleAirs right?

MS. HURLEY: Yes. Yeah.

PANEL MEMBER QUINTANA: Okay.

MR. HURLEY: And we are actually intending on looking at those data, yeah.

PANEL MEMBER QUINTANA: Um-hmm. And in terms of contacting researchers, two suggestions. One is there might be researchers doing not directly doing air pollution studies, but, you know, in our School of Public Health, there's a lot of people doing activity health promotion people, increasing activity in the community and they have lots of people wearing monitors and they show exactly where they went, you know, and taking biological

samples from them.

And, you know, for many pollutants, you can have these estimates from near-road exposure, et cetera, which are pretty good based on location --

MS. HURLEY: Um-hmm.

PANEL MEMBER QUINTANA: -- and this model is for a lot of communities.

So there's this kind of -- and they have a lot of these biological samples that they take often to look at, you know, direct health benefits. So that's one suggestion. And the other one, I was just trying to figure out how to take advantage of this natural experiment of COVID and increased air filtration in a lot of schools and stuff like that. I'm not sure if anybody had taken any samples, you know, before and maybe encourage them to take them after these -- you know, this increased filtration that was put in place in many of the schools for COVID reasons, so...

CHAIRPERSON SCHWARZMAN: Maybe we could pin this, just because we have a longer discussion time following --

PANEL MEMBER QUINTANA: Oh, sorry.

CHAIRPERSON SCHWARZMAN: -- question and answer. But I think those are two great things that we could just put -- will you remember them, Jenny, for a larger discussion?

PANEL MEMBER QUINTANA: (Nods head).

CHAIRPERSON SCHWARZMAN: Thank you. And then Ulrike for questions

PANEL MEMBER LUDERER: Well, one of my questions was already asked by Jenny, which is whether the IQAir filters were left with the -- the school.

The other question I had kind of related to that -- I don't know. Maybe I'm misunderstood it, but it looked to me -- and I think you said that the biggest differences between the outdoor I think it was both the carbon black and the PM2.5 between the classrooms that had no IQAir filtration and those that did was overnight. So I was just wondering so were they leaving them on overnight or, you know -- or did I misunderstand what you said?

MS. HURLEY: No. That is what I said, yeah. And they were instructed to leave them on overnight. And, you know, we're not sure exactly why we see the biggest differences there, but a likely explanation is that the doors are definitely closed overnight. So that's when you -- we would see the biggest -- and windows. The windows were never opened anyways. But, you know, during the day, the doors were often propped open because of COVID. But at night, when the doors are closed, we're thinking we can see a bigger difference in the air

filtration.

PANEL MEMBER LUDERER: Thank you.

CHAIRPERSON SCHWARZMAN: Thanks.

Tom.

PANEL MEMBER McKONE: Unmute. I had to find the unmute button.

So again, I guess just a clarification. So the PurpleAirs were indoors and outdoors, correct?

MS. HURLEY: Yes.

PANEL MEMBER McKONE: And so to characterize the exposure, I guess most of the time was indoors and you don't know a lot about their home environment, other than it might be related to outdoors. I mean, so in terms of total exposure time, we just basically get the school time.

I mean, a comment is I have -- I have a PurpleAir indoors and outdoors and they are quite different even in an area with relatively clean air. We get much different readings indoors and outdoors. But one of the issues with the PurpleAir is you can't really -- at least the ones I have, you don't really turn them on or off. I mean, they're either plugged in or not plugged in. And you don't want people to plug them in and then unplug them and forget to plug them back in.

MS. HURLEY: Right.

PANEL MEMBER McKONE: So they're very difficult to use that way.

My other question is so PurpleAir, there was a study at Lawrence Berkeley Lab looking at these different like $250, $300 PM monitors compared to the $10,000 really first class monitors that EPA uses, but can't afford very many. And it's very -- I don't know if you took this into consideration or thought about it. One of the things that was interesting about that study is it -- that actually the PurpleAir did really well in terms of being centered, but it had a lot of spread. So one thing to be aware of is that it has -- it is -- it has -- it has a lot of spread around the center line, but at the least the center line of the data is in the right place compared to a gold standard. But it also means that, you know, we are -- you're measuring -- it's a fuzzy measurement in some ways. And I don't know if you've been able to take that into consideration.

But again kudos. I mean, you know, if it weren't for PurpleAir, you couldn't do these studies where you get so many monitors and use them, because they're relatively inexpensive compared to the standard air quality monitoring devices.

MS. HURLEY: Yeah. Thanks. Thanks for both those points, Tom. I think one thing that I -- is

important to mention, which I just made passing mention of in my presentation is that these PurpleAir monitors aren't just like the ones that a consumer buy -- well, they start out as one just like a consumer buys, but then we had them -- before we deployed them, we had them calibrated to a stationary -- you know, one of the stationary air monitors, and so that takes into -- it adjusts for meteorologic or environmental factors, like both temperature and relative humidity.

PANEL MEMBER McKONE: Um-hmm.

MR. HURLEY: And once they're calibrated, they're in very good agreement with the stationary monitoring devices. So they're a little more accurate than what you might just -- the average customer might get.

PANEL MEMBER McKONE: Well, that's a good choice, because they actually come with a calibration routine. I mean, you can actually re -- in the PurpleAir, those --

MS. HURLEY: Oh, I didn't know that consumers could do that.

PANEL MEMBER McKONE: Oh, there's -- it actually has a built-in adjustment, which is the standard adjustment from a number of studies. But the trouble with that is is it's not site specific. So the fact that you use the site specific calibration actually --

MS. HURLEY: Okay.

PANEL MEMBER McKONE: -- is a really good idea and that's a really strong point --

MS. HURLEY: Yeah.

PANEL MEMBER McKONE: -- of what you did.

MS. HURLEY: And then one of the other things I just want to stress in some of the data I showed, you know, with the -- the plots. These are just sort of preliminary quick snapshots of the data. We really haven't taken into consideration the variability in the measurements and -- and whether or not these differences we're seeing are really significant or is it just sort of noise in the data. And so those will be some of the things we look at next.

PANEL MEMBER McKONE: I mean, one -- just one final comment. I watched PurpleAir in my neighborhood. And there are hot spots. Some of these -- some people must be near like a -- the vent from a restaurant or something, because everyone will be likely really low and then there will be one monitor that will be -- you know, and I don't think it's a calibration problem. I think it's actually near a source --

MS. HURLEY: Um-hmm.

PANEL MEMBER McKONE: -- that's very strong, because there are like -- there are some of the monitors -- outdoor monitors -- now, indoor monitors,

that's a totally different story. And you can watch those and see when people are cooking greasy food, because, you know, the outdoor air quality will be five and the indoor air quality will be 300. But I don't think that was an issue. I don't think you had a lot of hot spot indoor, because you weren't -- they weren't doing cooking, or burning candles, or anything like that, that would drive the monitors off scale, or way high.

MS. HURLEY: Yeah.

CHAIRPERSON SCHWARZMAN: Okay. Thank you so much for that presentation. And we now have our -- the longer stretch here for more discussion. And maybe what we could do is first return to Jenny's discussion points and then -- and we'll go from there.

PANEL MEMBER QUINTANA: So I was just -- sorry. Did you want me to talk now?

MS. HURLEY: Yes, please. I wasn't sure if I was supposed to remember what your discussion points were or if you were going to bring them up again.

(Laughter)

PANEL MEMBER QUINTANA: It's pretty tough.

MS. HURLEY: Yeah.

(Laughter)

PANEL MEMBER QUINTANA: No, I was just -- I was just suggesting perhaps spreading the word about air

pollution measurements to faculty who do studies of physical activity for example and have very detailed -- people wearing monitors where they know they are every second of the day and they've mapped their location and they have -- can overlay an air pollution map pretty easily to that data. And they often have samples they've collected. I was just suggesting that and I can ask people I know too, because some of those are the same communities that had applied for AB 617 money back when, even though they weren't designated.

And my other point was just --

MS. HURLEY: Yes, I --

PANEL MEMBER QUINTANA: Yes. Sorry.

MS. HURLEY: Oh, I was just going to say I think that also speaks a little bit to our -- the development of our RFI and that we don't want to just get information about air pollution studies, but other studies that could be then adapted to look at air pollutant exposures. I think the kinds of studies you just mentioned is a great example of that to make sure that we capture those somehow.

PANEL MEMBER QUINTANA: Well, I've also had kind of a long-running battle with our health promotion faculty that they're always promoting exercise, like go outside and run around. And I was like, well, maybe they're

better off watching TV if they live right next to the 5 at the border. You know, I mean --

(Laughter)

PANEL MEMBER QUINTANA: I mean, really you have to think about these and some of these issues about where it's safe exercise, which is a really important thing for the community members could also be an issue. And I only want to kind of emphasize, I think it would be really nice to encourage intervention studies where there's an actual solution built in to the measurement, kind of like the study we just saw. I think that's really important for communities. So whether it's safer places to exercise, safer times of day, or if there's some kind of piece that could help give direct advice to the communities, I think that would be really good.

And my other comment wasn't super helpful, because it didn't have any actually concrete suggestions, but I was just thinking it would be nice if we could take advantage of this natural experiment that we have of this increased ventilation from COVID-related in schools, and if there's anybody that did before or after. I can hear somebody whispering. Sorry.

MS. HURLEY: Oh, yeah. To my knowledge, there is not -- I don't know of any study where they've done sort of before and after COVID. I would love to -- I think

that would be super valuable too, but I don't know of any.

PANEL MEMBER QUINTANA: Um-hmm. Thank you.

CHAIRPERSON SCHWARZMAN: Tom, are you raising your hand to add into that?

PANEL MEMBER McKONE: Yeah.

CHAIRPERSON SCHWARZMAN: Yeah.

PANEL MEMBER McKONE: I raised my hand again with another follow-up.

CHAIRPERSON SCHWARZMAN: Please.

PANEL MEMBER QUINTANA: So the monitors are staying in place, right?

MS. HURLEY: Yes.

PANEL MEMBER McKONE: And the -- how about the indoor IAQ filtering systems?

MS. HURLEY: Yes, they are staying in place as well.

PANEL MEMBER McKONE: One of the things that you might want to look for -- unfortunately, it's likely to happen -- is a fire -- wildfire.

MS. HURLEY: Yeah.

PANEL MEMBER McKONE: I mean, again I did this personally, but it's not publishable, but I think you might collect enough data to show the benefits of cleaning indoor air during fires. We saw -- I mean, in our house -- in all -- we just had a MERV -- MERV 13 filter on

our furnace and we ran it, and we got enormous benefit during one of the fire seasons. You know, the difference that you could see in the PurpleAir between indoor and outdoor a remarkable benefit. And I think the advantage of doing this is to really have the information and even be able to back it up maybe with some biomonitoring, put probably that's a reach.

But this -- the whole idea of showing the benefits of using indoor -- air cleaning indoors, it really can make -- if it's done right, it makes a big difference and how to do it, you know, how to run the filters during a -- wildfire events. And even like some community outreach to convince people to clean -- and you don't have to spend a lot of money, there are actually cheap solutions for cleaning indoor air, even with a fan and a -- you know, the -- again my colleagues at Lawrence Berkeley Lab came up with a very effective indoor air filter where you just go buy a MERV 13 filter, duct tape it onto a fan and run it and you get real benefits. So you've got the opportunity to show the benefits of air cleaning during wildfires. And again, you don't have to do anything other than wait for a wildfire and then look at the data that you're collecting.

MS. HURLEY: Yeah. Yeah. That's a -- that's a really good idea. You know, we -- while we left the air

filtration units behind, we don't know the degree to which the school is using them. I'm -- but I'm sure that during a wildfire episode, they would be very motivated to use them. And we're continuing to stay in contact with the school. And, you know, the PurpleAir data is just continuous, so we can, you know, grab that any time we want. But I think this is -- that's a great idea and we could, even if we, you know, see a wildfire episode developing down there, we can reach out to the school and say, hey, make sure you've got those, you know, going. And then we could -- we could do a really nice little analysis to evaluate their effectiveness. So thanks for that.

PANEL MEMBER McKONE: Okay.

CHAIRPERSON SCHWARZMAN: Other points of discussion on this. The -- we could -- Susan you might want to put up your slide that have sort of further prompting discussion questions for more input on this topic about thinking about these sort of short turnaround studies on it -- on an annual basis and input on how you might solicit those projects in a more systematic way.

MS. HURLEY: So this one I guess is what -- is this what you're thinking?

So, yeah, as I think I said, we're just starting discussions within the Program about how we might develop

an RFI to -- to you know, develop kind of a long-term strategy for soliciting ideas for these studies. We're not sure whether or not we would do one RFI, one to academic researchers versus a different one to community organizations. I think it -- you know, we still need to work that through.

So some of our -- our questions are, you know, what -- what types of information should we collect to help evaluate both the feasibility of these projects as well as the potential impact? And then just generally what should the process look like? You know, is it a one-time process? Do we have it just sort of continuously open and then we have a certain time each year, where we go in and look at the ideas or do we reissue it every few years?

And then the other thing is, you know, this isn't -- we're not seeing this -- this isn't like an RFP where there's a formal application and a formal scoring system and then we choose the one that got, you know, the highest score or the few that had the highest score. So I think we need to think about after we get this information, what -- what should the follow-up process look like and how do we convey and set expectations to those who submit ideas.

So these are just discussions we're starting to

have and we'd love to hear if anyone has thoughts on any of these issues.

CHAIRPERSON SCHWARZMAN: Thank you. I think Jenny had a question that is maybe relevant to this in thinking about subsequent studies, Jenny, about location of the intervention.

PANEL MEMBER QUINTANA: I just had a quick question that -- following up on the previous comment about air filtration, because there are studies on interventions going on other places, you know, so wildfires and filter study. I think there's one going on in the state of Washington by the School of Public Health at the University of Washington. And so I'm assuming samples have to be from California residents, but it occurred to me I didn't know if that -- if that was true or not, if it was a very interesting question to California residents. So that was one question.

And the second just comment was perhaps you should loop in community organi -- some kind of community review of the projects to, like for example, the AB 617 Community Steering Committee or Community Advisory Committee, whatever it's called, that's statewide could perhaps kind of give feedback on to what they thought was the most interesting or something like that, as well as -- as well as just you guys reviewing it.

Sorry about my dog.

(Laughter)

MS. HURLEY: So to answer your first question, yeah, these do have to be conducted in California. And, yeah, so I think -- regarding your second comment, are you -- I think -- just I want to make sure I understand your -- what you're suggesting is in evaluating the ideas, we should make it a broader process and not just involve Program staff, but others, you know, community -- or CSC member -- or CSC AB 617 -- people who are involved in AB 617 and others, is that --

PANEL MEMBER QUINTANA: It was just an idea. I was just thinking that -- again, the Tobacco-Related Disease Research Program I was thinking about, because I just submitted a grant, but they -- they went to having community reviewers, as well as kind of academic reviewers to give feedback on not so much the science, but whether this was important to do or not and I just -- maybe a similar model or something like that.

MS. HURLEY: Yeah, that's a good idea. I like that.

CHAIRPERSON SCHWARZMAN: I appreciate that point about community review and it connects I think -- we've talked a lot on this Panel and the Program has thought a lot about the value of intervention studies. And I think

those are often also really appreciated by communities for the benefit of taking action at the same time as, you know, not only continuing to be studied, but a study that includes measuring the effect of an action -- I think are often very well received.

We don't have to limit our discussion to this RFI process either. So anything -- I wanted to -- to raise these questions, so that Susan would get the input that the Program is requesting, but we can talk about anything.

Lara.

PANEL MEMBER CUSHING: Thank you.

I wanted to echo the suggestion for community review. I think that's a great idea. It might be challenging on this sort of one-year timeline that you laid out to, you know, just build in time for that.

And then Meg's comment about interventions. I think another area of -- that might be good to focus is like projects that can inform policy, and to reduce exposures, and like act as policy processes and debates. Earlier it was mentioned that you are collaborating with the Water Board, I think it was, to look at biomonitoring of PFAS in relation to drinking water samples of PFAS in the context of developing, you know, regulatory standards for PFAS. So that's like a great example of -- and I think for communities, that's also an important

consideration is, again as Meg said, like not only documenting problems, but also informing efforts to reduce exposure and interventions as part of that. And policy is part of that too.

So I just want to put in a plug for that. Oh, and then I had a very quick comment about the RFI process is that, in my opinion, having a deadline will get you more submissions than having an open continuous process --

(Laughter)

PANEL MEMBER CUSHING: -- just because it makes, you know, people turn something in.

MS. HURLEY: Yeah.

PANEL MEMBER CUSHING: And so you might think about that.

MS. HURLEY: Excellent point. Thank you for both those comments.

CHAIRPERSON SCHWARZMAN: Maybe I'll check -- take this natural pause. Ulrike, I see you. I'll -- since I started calling for the comment, let me just check, and I'll get you next -- just to check if we have anything that came in on the email to the OEHHA or if there's anything in the room, Stephanie, questions or comments that we should get in here.

MS. JARMUL: No comments from the room. Thank you.

DR. HOLZMEYER: I don't -- I don't think anything new has come in.

CHAIRPERSON SCHWARZMAN: Okay. Great. Thanks.

Ulrike.

PANEL MEMBER LUDERER: Yeah. I just wanted to -- to just address what you -- you know, in your topic for discussion, whether it should be open, you know, to both community organizations and academic researchers or separate RFIs. I mean, I think it -- you know, one of the strengths of a lot of the studies of Biomonitoring California, you know, have had is, you know, working -- having partnerships between community organizations and, you know, Biomonitoring California, or in this case if you're having an RFI, you know, to look for ongoing collaborations where you already have, you know, the community organizations maybe working with academic researchers. So I wouldn't necessarily separate the two is what I'm saying.

MS. HURLEY: Yeah.

CHAIRPERSON SCHWARZMAN: Susan, do you want to put the other questions up just so we get a moment to look at those, before we conclude the discussion.

And then I think, Jenny, did you have a question or a comment.

MS. JARMUL: Meg, Martha Sandy also has a

comment --

CHAIRPERSON SCHWARZMAN: Okay.

MS. JARMUL: -- in the room.

DR. SANDY: Sorry. This is Martha Sandy of OEHHA. I just wanted to follow up on Susan's response to Ulrike. I think what -- we're hoping that our projects are collaborations between communities and academic researchers. And, I mean, that's what we've been doing in the past as we -- what we hope to do. But we're wondering if we want to get an RF -- put out an RFI to community groups and hear from communities what they're worried about. We could then, if we chose to act on some of that information, work with the community group and find academic partners to help us do the study. I just wanted to say it's not either/or. It's like -- but do we frame an RFI that a community organization or communities would be more likely to give us input -- we're worried about this kind of air pollution and these effects we have in this environment, you know, something like that and then hear from academicians who have ongoing ideas of proposals of certain studies and interventions. And either type of response we could -- we would put together the communities and the academic partners.

Thank you.

PANEL MEMBER LUDERER: Thanks for the

clarification.

CHAIRPERSON SCHWARZMAN: Thanks, Martha.

Jenny.

PANEL MEMBER QUINTANA: I guess one thing I'm not clear about, but were you -- was this only an RFI for basically getting samples mailed to you, you know, or is there money for the community groups to, you know, have a partner with a clinic and collect urine samples, and ship the samples on dry ice or what -- I think you should be clear about what kind of money is available beyond offering free analysis.

They basically -- you know, how much would be available or is this something that community members could kind of get together and provide urine samples, for example, close to the agricultural field and far from the agricultural field or would -- you know, I'm just thinking about like how much re -- how many resources there are to obtain samples versus get already obtained samples to make it clear in the RF -- in the process I guess.

MS. HURLEY: Yeah. Well, just -- just to clarify here -- because yeah, I would agree that would all have to be very clear when we're issuing the RFI, but the -- there's $350,000 each year allocated to this. And so we can use that in a variety of ways, but we can certainly use it as we did with SAPEP to go out -- you know, work

with the community group, identify a site where we can do the study. And our community partner helped us identify the school and get us into the school. And then collect the samples, design the questionnaire, we did that all in collaboration with the community partner.

And there is the ability to put -- to -- for some of the money to go to the community organization. It can't all go. There's a cap on that, but we do have the ability to support community partners in actively being engaged in the study. So this wouldn't just be like BiomSPHERE or like the prior RFIs that we've done through the Program where we're just looking for samples. I mean, we really can -- and -- but the -- and -- and we want to be doing that in the future. We want to be doing more of that. And we're hopping the RFI will lead us in that direction.

PANEL MEMBER QUINTANA: That's great.

CHAIRPERSON SCHWARZMAN: Susan, do you want to put up the other questions that you had in case that sparks some -- we're almost -- we're almost to public comment period time, but just if there's any last thoughts.

MS. HURLEY: Yeah. We already touched on some of this in the prior discussion after Kathleen's talk, but, you know, we're just thinking, you know, the Program has

done -- well, so with our community biomonitoring studies, we're just now working on the results return for SAPEP. And as part of that, we will be having community meetings to share the findings -- you know, after we return the results to participants, we'll be having community meetings to share the overall study findings with the community where we did the study, but we really want to start thinking more about then how do we disseminate the information further, so it can be useful to other communities that are similarly burdened, to other communities that, you know, may be interested in using the same kind of air filtration.

So we're just wondering if people have ideas on how we might provide information that's -- will expand its dissemination to other communities that can use it and what should that information look like? You know, how -- what's the best way to get that out? And, you know, I think Tom mentioned the use of -- I think it was Tom -- social media earlier. And, you know, I think that's -- it's uncharted waters for us and it has a lot of potential pitfalls, but it has a lot of -- a lot of potential also. So that's, you know, one idea.

But I guess just kind of -- if anyone has any ideas of how we can make sure that our study findings aren't just used in the -- you know, the small community

where we're working, and that it can have -- how we can maximize the impact.

PANEL MEMBER QUINTANA: I lowered and raised my hand, Meg, just so you know.

CHAIRPERSON SCHWARZMAN: Thank you.

Jenny, please go ahead.

PANEL MEMBER QUINTANA: I just was thinking that since AB 617 really hugely increased the engagement of the local air districts, and they often -- they usually have Twitter and all kinds of stuff going on, it's possible -- perhaps, if it's air-related, they could -- you could give it to the air districts and they could disseminate it through their dissemination community outreach people would be one point.

MS. HURLEY: Good idea.

CHAIRPERSON SCHWARZMAN: Put out a last call for comments, because then it's time for us to turn to the public comment period.

So hearing none, thank you so much, Susan, for this presentation. It's great to hear about these results and really look forward to seeing the process evolve.

MS. HURLEY: Thank you.

CHAIRPERSON SCHWARZMAN: So we have 20 minutes in the agenda that are allotted for the open -- open public comment period. And commenters during this time are --

can -- are welcome to provide comment on any topic related to Biomonitoring California, not just the topics that we've been discussing today.

So if you're attending the webinar, you can submit written comments and questions through the Q&A function of Zoom or by emailing biomonitoring@oehha.ca.gov or you can speak by using the raise hand feature and I can call on you. And if you're in person and you wish to comment, you can come to the podium in the room or raise your hand and Stephanie Jarmul will make sure that you are heard there.

So let me check in with Cheryl about any -- I don't see any raised hands on the webinar and Cheryl can tell me if there's anything by email.

DR. HOLZMEYER: No. I think nothing new has come in. Thank you.

CHAIRPERSON SCHWARZMAN: And we can raise -- we can leave a few moments here in case people were not -- hadn't -- hadn't already managed to put in a request or a comment. This is the last item on the agenda, so we -- I can leave a minute or two.

And then in -- on-site in Oakland, Stephanie, is there any comments we should tend to?

MS. JARMUL: No comments from the room.

Thank you.

CHAIRPERSON SCHWARZMAN: Okay. Jenny, did you have something to add?

PANEL MEMBER QUINTANA: I had a public comment, I guess, that I wanted to just -- we had a lot of discussion about communities and disadvantaged communities for biomonitoring. And I wanted to just remind all of us that we had talked about occupational groups as being also an important group to monitor. And I'm thinking of actually exposed to pesticides and other things, I think that -- that I'd like to just raise the importance of occupational exposures, you know, to this future work as well.

CHAIRPERSON SCHWARZMAN: Thank you for that.

And, Cheryl, if there's nothing else that has come in online, I just wanted leave a moment in case someone hadn't had a chance to submit a comment. Then let me just check in and make sure there's nothing else.

DR. HOLZMEYER: There's nothing else. Thank you.

CHAIRPERSON SCHWARZMAN: Okay. In that case, we can wrap up and adjourn just a few minutes early.

A couple of announcements before we adjourn. A transcript of the meeting as usual will be posted on the Biomonitoring California website when it's available. The next Scientific Guidance Panel meeting will be on November 18th, 2022 from 1 to 4 p.m. And there will be more options available about attending that meeting and that

information will be made closer to the meeting.

So I want to thank the staff who organized this meeting, and particularly to Kathleen and Susan for your presentations. It's really helpful to hear progress and inspiring. And thank you to the Panel and everyone else who participated in the meeting.

And with that, I'll adjourn the meeting until November. Thank you.

(Thereupon the California Environmental Contaminant Biomonitoring Program, Scientific Guidance Panel meeting adjourned at 3:14 p.m.)

CERTIFICATE OF REPORTER

I, JAMES F. PETERS, a Certified Shorthand Reporter of the State of California, do hereby certify:

That I am a disinterested person herein; that the foregoing California Environmental Contaminant Biomonitoring Program Scientific Guidance Panel meeting was reported in shorthand by me, James F. Peters, a Certified Shorthand Reporter of the State of California, and thereafter transcribed under my direction, by computer-assisted transcription.

I further certify that I am not of counsel or attorney for any of the parties to said meeting nor in any way interested in the outcome of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of August, 2022.

JAMES F. PETERS, CSR
Certified Shorthand Reporter
License No. 10063