MEETING

STATE OF CALIFORNIA

ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

ENVIRONMENTAL CONTAMINANT BIOMONITORING PROGRAM

SCIENTIFIC GUIDANCE PANEL

UNIVERSITY OF CALIFORNIA, DAVIS

PUTAH CREEK LODGE

DAVIS, CALIFORNIA

FRIDAY, MARCH 2, 2018

10:05 A.M.

JAMES F. PETERS, CSR
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A P P E A R A N C E S

PANEL MEMBERS:

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Carl Cranor, Ph.D., M.S.L.

Oliver Fiehn, Ph.D.

Marion Kavanaugh-Lynch, M.D., M.P.H.

Thomas McKone, Ph.D.

Penelope (Jenny) Quintana, Ph.D., M.P.H.

José R. Suárez, M.D., Ph.D., M.P.H.

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT:

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Amy Dunn, M.P.H., Health Program Specialist, Safer Alternatives Assessment and Biomonitoring Section, Reproductive and Cancer Hazard Assessment Branch

Sara Hoover, M.S., Chief, Safer Alternatives Assessment and Biomonitoring Section, Reproductive and Cancer Hazard Assessment Branch

Duyen Kauffman, Health Program Specialist, Safer Alternatives Assessment and Biomonitoring Section, Reproductive and Cancer Hazard Assessment Branch

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH:

Kathleen Attfield, Sc.D, Research Scientist III, Exposure Assessment Section, Environmental Health Investigations Branch

Jianwen She, Ph.D., Chief, Biochemistry Section, Environmental Health Laboratory

A P P E A R A N C E S C O N T I N U E D

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH:

Nerissa Wu, Ph.D., Chief, Exposure Assessment Section, Environmental Health Investigations Branch

DEPARTMENT OF TOXIC SUBSTANCES CONTROL:

June-Soo Park, Ph.D. Chief, Biomonitoring Branch, Environmental Chemistry Lab

GUEST SPEAKERS:

Heather Arias, Chief, Community Planning Branch, Office of Community Air Protection, California Air Resources Board

Victor De Jesús, Ph.D., Chief, Volatile Organic Compounds Laboratory, Tobacco and Volatiles Branch, Centers for Disease Control and Prevention

Yana Garcia, J.D., Assistant Secretary for Environmental Justice and Tribal Affairs, California Environmental Protection Agency

Ulrich Weeren, Studio Weeren

ALSO PRESENT:

Davis Baltz, Public Health Educator

Kristin Dortch, Project Officer, State Biomonitoring Cooperative Agreement Grant, Centers for Disease Control and Prevention

Walter Ham, Chief, Advanced Monitoring Techniques Section, California Air Resources Board

Vernon Hughes, Chief, Community Assessment Branch, Office of Community Air Protection, California Air Resources Board

Tom Jacob, Chemical Industry Council of California

I N D E X

I N D E X C O N T I N U E D

P R O C E E D I N G S

MS. KAUFFMAN: Okay. It looks like everyone is taking their seats, so we would like to begin shortly.

And just a few housekeeping notes. Today's meeting is being streamed live over the web and recorded on videotape. So please speak directly into the microphone into the microphone, introduce yourself before speaking, and turn off the microphone when finished. This is for the benefit of people participating remotely, for the audio and video crew, and for transcriber.

As a reminder, you should assume that you're always on camera, and that anything you say may be captured on a live microphone.

The materials for the meeting were provided to SGP members and posted on the Biomonitoring California website. A small number of copies of the meeting materials are available at the table in the back of the room.

We will break at 12:15 for lunch and take another short break at about 4:30 p.m. The restrooms are located in the open door there on the other side of the room. And the emergency exits are here at the front and at the back.

And I neglected to introduce myself. I'm Duyen Kauffman with the Office of Environmental Health Hazard Assessment. And I would like to introduce Lauren Zeise,

Director of the Office of Environmental Health Hazard Assessment.

DIRECTOR ZEISE: Good morning, everyone. And welcome to this meeting of the California Environmental Contaminant Biomonitoring Program, also known as Biomonitoring California. So I want to, ahead of time, thank everyone for coming, participating, and sharing their expertise. We've got a full day of meeting ahead of us. And so I'm just going to start with a few announcements

So first, I'd like to say a special thank you for Panel Member Oliver Fiehn for providing this lovely setting for our meeting and also providing us coffee and tea. Thank you very much. And also, thank you to Jeannette Martins, your special assistant, for getting this all set up. So very good.

MS. HOOVER: Closer to the mic.

DIRECTOR ZEISE: Into the mic. Okay.

Second, you'll recall at our meeting last March, we celebrated the Biomonitoring California the 10th anniversary. And so we've come to the end of the year, and we'll be taking down our lovely 10th year logo. And then over the next few months, we'll be -- we'll be posting on the website pages of our accomplishments that we shared with the Panel. So the end of our first, and

now we're looking forward to the next 10 years.

So then finally, we met -- the SGP met November 9th in Richmond. And I just want to give a brief recap of the November 9th meeting. So the Panel received updates from the Program about our California Regional Exposures Study, the East Bay Diesel Exposure Project, and the Program's environmental justice activities.

Then Dianna Rossi -- Deanna Rossi of Impact Assessment, who's a contractor for -- was a contractor with the Program reported back on listening sessions with environmental justice organizations, and she's soon going to be completing her report. And that will also be posted on our website.

And then finally, we delved into environmental justice and chemical hazard concerns in communities across the State with leaders and -- representing the Center for Community Action and Environmental Justice, Comite del -- Comite Civico Del Valle, Communities for a Better Environment, and the Environmental Justice Coalition for Water. And we posted a summary of the input received from our guests, the Panel, and the public at the November meeting on our meeting page, on the Program's website at biomonitoring.ca.gov.

And so at this discussion in November, in part inspired the afternoon session that we'll be hearing today

on community exposure to air pollutants. And we're really looking forward to hearing in that session from our colleagues at CalEPA, the CalEPA Environmental Justice and Tribal Affairs Program, the California Air Resources Board, the CDC. And so as part of this, we're going to be discussing opportunities for collaboration and -- on near-term and long-term projects.

So now, I'll turn the meeting over to the Panel Chair, Meg Schwarzman.

Meg.

CHAIRPERSON SCHWARZMAN: Thank you, Lauren. And it's nice to be here. It's nice to be here with all these trees around us.

Is that okay?

All right.

So I want to just do a quick overview of the meeting -- the plan for the meeting and our goals, and then we'll move right into it. So the first thing that we're going to do this morning is have updates -- Program update and then laboratory updates. And then this afternoon, we're going to have a special session on community exposure to air pollutants and what the role of biomonitoring is in that kind -- in assessing that exposure.

So we'll have -- in that afternoon session, we're

going to have presentations by guest speakers from CalEPA, from CARB, and from the CDC. We'll also have an open discussion of -- to generate ideas about how Biomonitoring California can engage with communities that are disproportionately affected by air pollution, how Biomonitoring California can generate date that will support the efforts to reduce air pollutant exposures, and contribute to the implementation of CARB's new community air protection program that was established under Assembly Bill 617.

In that discussion, we hope to identify recommended next steps for the Program -- that the Program can take to help advance those priorities. So that will be the afternoon session.

And then we'll close with a demonstration of, and a chance to provide input into, a new website feature that's currently under development. And that feature is aimed at increasing the awareness of Biomonitoring California's findings, and the -- OEHHA is looking for input into that.

So that's an overview of what we're doing today. If you wish to comment on a specific item of today's meeting, you can fill out a comment card that Duyen has in the back. And if you're joining the meeting via webcast, the way to do that is through email.

Biomonitoring@OEHHA.ca.gov, and we will check for email comments during our comment sessions.

So comments that are submitted by email that are relevant to the topic under discussion we'll read those aloud during the meeting, paraphrasing them as necessary when there's time constraints. And we'll just ask you to keep comments sort of calibrated to the time allotted.

So now, I'd like to introduce Nerissa Wu, there she is. Nerissa is Chief of the Exposure Assessment Section at CDPH and she is overall lead for Biomonitoring California. And she's going to give us an update on current Program activities.

DR. WU: Good morning, everybody.

Hello. Good morning, everybody. Glad everyone has made it here. I barely made it through the parking lot to get here on time.

(Laughter.)

DR. WU: So I am going to start with a quick look at -- loading.

Okay.

(Thereupon an overhead presentation was presented as follows.)

DR. WU: -- a quick look at our Program budget. You have seen this graph before, and you've heard the story before. We have talked over the last couple years

about limited term positions, and how our budget has been pieced together through budget change proposals, and that eventually these limited term positions would come to an end at the end of fiscal year 17-18.

Well, that time is pretty much now. And by the time you see us next, we'll be in the next fiscal year, and these limited term positions, the staff and associated budget, will have decreased. We do have a lab update coming up after I speak, and our lab directors will be talking a little bit more about the specifics of how that affects the Program's ability to do our work.

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DR. WU: But I am going to talk a little more about what we have -- some active projects we have going on right now. There's a lot of activity. I'm going to start with the Northern California firefighting study. This is not something we've talked about in this forum before, because it's a project that came on us very suddenly.

This was in response to the fires in Napa, Sonoma, and Mendocino County in October. There's a lot of concern, both in California and elsewhere, about the exposures that firefighters are subject to in the line of their duties. This particular fire, because of the intensity and the duration, and because firefighters went

out to this wildfire wearing outdoor gear. No respirators, not their usual suits that they wear for urban building fires. And then they were encountered by vehicle fires, buildings, industrial and commercial complexes going up in flames.

We've also all seen pictures of firefighters having worked 24 or 48 hours at a stretch, you know, sleeping and eating in their gear. So there are lots of opportunities for unique chemical exposures that we're really concerned about.

So we wanted to try to assess this exposure. And, of course, it takes awhile to get a plan together and a protocol approved. But in collaboration with UC Berkeley, with Rachel Morello-Frosch's group, Commonweal, and the San Francisco Firefighter Cancer Prevention Foundation, led by Tony Stefani, we were able to get an amendment on an existing protocol together, and get out into the field within five weeks of the fires.

We were able to collect 180 samples. And these are from firefighters from the San Francisco, Santa Rosa, and Santa Clara Fire Departments, most of whom were deployed in Santa Rosa and the surrounding area, and some of whom were back at their home departments just doing their regular firefighting work.

So we have samples collected, our labs are

working doing metals analysis right now on those samples, and we're adding on a subset we'll take a subset of those samples and look at POPs and hopefully PFASs. And we would like to do much more analysis on these samples. We do have whole blood, serum, urine, and buffy coat for all 180 of these firefighters. So as resources allow, we would like to -- we would like to continue to explore what The exposures might have been.

And one of the things that we've been talking about in the collaborative is, you know, five weeks is actually a very short period of time to get a study together. But in terms of metabolic time, it's quite a long time, and there are lots of things we won't be able to look at because five weeks have gone by and many of the chemicals have already metabolized.

So we've been talking about the need for kind of an emergency response IRB protocol where we have the tools ready to go in after a fire or other emergencies and get a protocol set ahead of time, so we can get into the field more quickly. And unfortunately, there will be another fire season in California. These wildland and urban fires, the two mixed together are becoming more and more common. So likely, we'll have another situation like this at some point, and we would like to be prepared to do some biomonitoring in those cases.

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DR. WU: So the East Bay Diesel Project is another thing we have going on. This is the study -- you heard about this in quite a bit of detail in November. This is looking at levels of 1-nitropyrene, the biomarker of diesel exposure in child and adult pairs, 50 households in the East Bay.

The project has launched. They recently -- they got their IRB approval both from the State and UC Berkeley IRBs in November, and recently actually got approval to increase the incentive to participants from $40 to $80, which is great.

They are working with West Oakland Environmental Indicators Project to recruit participants, tabling at a number of community events. And I believe they have 10 household pairs recruited. I saw Duyen with samples, so we have samples being collected. And if you have more questions about that, Duyen, and Russ, and Sara are here and can come up and answer specific questions.

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DR. WU: And then we have the CARE Study, the California Regional Exposure Study. And over the last year, we have spent a lot of time talking about the protocol, and how we should plan it, and projecting how things would go. But now we're live in the field. And so

I'm very happy to be able to provide some actual real information about what's happening in the field, and also highlight our participant management and participant proto -- portal online, which is something that is now available.

So just a reminder of what the CARE Study is. This is our statewide biomonitoring effort, the California Regional Exposure Study.

Thank you.

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DR. WU: We have broken California -- because it's so gigantic, we've broken it into, eight different regions, and we'll be biomonitoring region by region approximately one per year, recruiting 300 to 500 participants per region. We'll be biomonitoring for metals and the per- and polyfluoroalkyl substances in each of those regions, and hoping to add on -- add on an analyte -- analytical panels as we go.

So we're in region 1, Los Angeles County, right now. And we're very fortunate, we have the funding this year to include 1-nitropyrene the biomarker of diesel exposure for 150 of those samples. So we're committed to doing that for Region 1. Hopefully, we'll be able to do that in the future, and we're still looking at the potential to add on other panels.

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DR. WU: The overall participant flow, we have discussed in the past. But just briefly, we do our recruitment in a number of ways, which I'll talk about momentarily. And interested people fill out a pre-screening survey, which is basic demographic information and eligibility criteria. And if you're eligible, you go into what we call the pre-screening pool.

Then we sample from that pre-screening pool, which enables us to control the demographics of the study population a little bit. And from that point on, whether you're an internet participant doing this online or a paper participant filling out forms on paper, your experience is a little bit different. But basically all participants fill out a consent form and an exposure survey, and then make an appointment to have their samples collected.

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DR. WU: So we formally started recruitment on January 8th. We sent this postcard out to 65,000 households across Los Angeles County. We went to a number of different community events, tabled at a number of health fairs, organizational meetings. We posted the site on craigslist. And we had a lot of incoming pre-screening surveys almost immediately, coming in over the internet,

but also people calling in to fill it out, and filling it out on paper at different meetings, so coming from a variety of places.

And we had enough interest that we did our first data pull for participants on January 18th. And subsequently, we -- every seven to 10 days, we do another data pull.

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DR. WU: So the process is slightly different for participants, whether they selected to participate on paper or on the internet. If you are a paper participant, we send you that -- this packet.

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DR. WU: And I actually have a packet here, if anyone wants to take a look at our materials. The packet is sent out, and this has the informed consent, the exposure survey, and information about the study. And seven to 10 days after we send that out, we give you a phone call. Welcome to the study. Hope you got our packet. Maybe get some feedback about whether the participant is planning to send that back. And it's a little bit of a reminder to get that packet back to us.

Once they send us back the informed consent, and the exposure survey, we review it to make sure that the informed consent -- the boxes are checked off, it's

signed, the exposure questions have been answered. And then we make a phone call back to the participant, we might have them complete some of the information they've left out. And then we schedule an appointment for them to show up and give us their blood and urine sample.

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DR. WU: On the internet, it's quite different. So an internet participant would get this welcoming email saying click here to activate your account.

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DR. WU: Once they have their account, it's set up so that the step -- the three steps of participation are very clearly outlined. And only the step that they're on is highlighted and enabled for clicking. So they go in the correct order that we want them to.

So here they're able to collect on step one, which is to sign the informed consent form. This is enabled by DocuSign, which is an online app, so you can sign this right online, and as you submit it --

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DR. WU: -- it enables step 2 which is to go in and sign your: -- to fill out your exposure survey.

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DR. WU: Once you submit the completed exposure survey, step 3 is enabled, and then a participant could go

to this list of dates and sites and select a place where they want to come give their sample.

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DR. WU: Once they have selected a site, this dropdown menu of available appointment slots opens up, as well as a map showing them exactly where the appointment is, maybe a little bit of information about where the -- you know, how to get into the building, stuff like that. And then they select an appointment, and they get a confirmation email. And they've completed steps one through three without actually having interacted with the staff. It's very streamlined. And we have found that internet participants tend to activate their account and go right through very quickly. They're not dropping out, because it's very streamlined.

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DR. WU: On the staff side, this application allows us to track individual participants so we can easily address somebody's questions or their needs if they need to cancel an appointment, or they're having trouble with their account. We can also track the overall participant flow, so we can see are people dropping out at a certain stage, are they getting stuck? And there's an automated reminder system, so if somebody fills out their exposure survey, but they haven't made an appointment, the

system will trigger a reminder to say remember to go back in and get to your next step. If they're not on the internet, we get a flag and we know to call them and remind them to keep going in the study.

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DR. WU: This also helps us monitor the need for field staff. We can look at an appointment date and say, well, we have six people coming at a certain time for blood draws, and it helps us staff those appropriately. And it helps us manage the samples. They're all bar coded. We can scan the bar codes into the system, and then their samples are associated with a participant ID, and can be tracked to the system from the freezer in our field office all the way through to the point where they're sent up to the lab. So it really facilitates staff tracking of the whole process.

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DR. WU: So how is everything going?

We sent out 65,000 postcards. As we've talked about, this was one of those bulk mail postcards. So in the big pile of newspapers and Safeway ads and everything, it's one of those pieces of mail. So we didn't expect a huge response rate. We got 158 -- 158 people responding to the pre-screening listed the mailed postcard as their source of information, which is a pretty low percentage.

It's 0.24 percent. So maybe not the most cost-effective method, but actually it -- it is reaching, we think, a group of people that maybe other recruitment efforts are not reaching. And at 158 people, it's actually sort of a significant portion of our pre-screening pool at this point.

As we continue to recruit with other means, that -- its significance may go down. But right now, we're still looking at it to see are these post cards reaching different demographics? But also do these participants that are returning the postcard, are they somehow different? Are they more invested? Are they making it into the study and actually making it to the end of the study in a way that's different from participants that we reach through other means.

Some other top recruitment methods. We have targeting outreach, which is -- targeted outreach, which is going to community groups, and doing tabling, or speaking at an event. And we found that this -- this accounted for 25 percent of our recruitment to the pre-screen.

Craigslist got us an additional 20 percent of our pre-screeners. And Craigslist is a very inexpensive easy way to reach people. But again, we really want to look at this data and see who is that reaching? Is it -- is it a

distinct demographic population. And also, are the Craigslist people following through, enrolling in the study, and reaching the end of the study, similar to other recruited methods. So this is a lot of analysis that has to be done once we get to the end of recruitment.

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DR. WU: Once we have our pre-screening, we have this rolling selection process. And it does take race and ethnicity and where you live in L.A. County into account, because we're trying to -- to be representative of the entire county.

Once we invite people into the study, are they actually enrolling? Well, as you see here, the internet participants actually are enrolling at quite a high rate, over 60 percent, which is great.

The paper participants, there are many more opportunities to lose a paper participant, so that enrollment rate is a little bit lower, 37 percent. So our overall enrollment rate is at 56 percent, which is really not bad for a study, but it does mean that we need a lot more people in our pre-screening pool in order to meet our enrollment goals.

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DR. WU: So where are we now, or where were we on Tuesday. This number keeps changing. We have gotten over

500 people into the pre-screening pool. We've invited 317 of them in to participate, and 179 of them have activated their account or sent us their informed consent, or have done something to indicate that they want to be in the study.

And as I said before, the internet people, for the most part, once they activate their account, they're going through to the point of scheduling. We don't know if they'll show up for their appointment yet, but we have collected -- at this point, we're at 63 samples. This number has been updated since Tuesday.

And we have not seen a lot of people withdrawing for this -- from this study or not showing up to their appointments. We have a very robust reminder system. Not only are you getting reminders to continuing onto the study, but if you have an appointment, you get a phone call or an email one to two days before your appointment to remind you to please show up, or if you need to, to reschedule.

If people can make it to their appointment, we do have the option of home visits. So we are trying to make this as convenient for people as possible. And I think that is partly why we have a low withdrawal rate so far.

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DR. WU: Woops.

AGP VIDEO: Is that your last slide?

DR. WU: No it's not.

AGP VIDEO: You must have hit the blackout button.

DR. WU: I didn't realize there was a blackout button.

(Laughter.)

AGP VIDEO: That's fine. That's all right.

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DR. WU: So lessons learned so far. Well, we do need to do more recruitment. We need more numbers. We also need to reach out to a more diverse population. About 30 percent of respondents have opted to receive their study materials on paper, which was a little surprising. I guess I assumed it would be a little bit lower than that, because I'm an internet user. But the response and completion rates are much better for the internet participants.

So I think in the future, we might think of maybe wording our -- when we ask people how do you want to participate in this study, making it a little more clearer what the two pathways entail, because some of the people may have ended up in paper, because they didn't understand the question. Still analysis to come.

But once they're enrolled, the participant drop

rate -- dropout rate is low. So we're doing pretty well in terms of collection of our samples.

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DR. WU: As far as what we'll be doing over the next six months or so, well, we are in the field until late May, early June. We expect to start getting metals results on a rolling basis, so we may start doing notification of elevated metals levels this spring. But then the results return packets for PFASs and metals will be going out towards the end of 2018.

In the meantime we are starting to look towards Inland Valley, which is Region 2, starting to make those community connections, and work with organizations to get set up for Region 2. And we anticipate our initial field work will begin in January 2019.

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DR. WU: So as I end, I just want to acknowledge the Biomonitoring staff. They're all working like crazy. This is a lot of work between all of these studies to get these launched and into the field. People are working really hard, whether it's preparing sample media or, you know, working SAS Code all night. And, you know, it's really great to the see rewards of their work and to be able to report out some of this to you.

CHAIRPERSON SCHWARZMAN: Great. Thank you,

Nerissa. So we have 10 minutes right now for Panel questions. And just as a reminder, we have a full 25-minute discussion session after we hear lab updates. So this is really a chance for clarifying questions for Nerissa.

Yeah, Jenny.

PANEL MEMBER QUINTANA: Hi. I have a couple questions, I guess, linking your -- one of your first slides about the budget with the last slides about the study. And what provisions are you making to collect multiple sample types, and different kinds of tubes, and archive them in conjunction with consent forms that allow for further analyses later on, if these participants have automatically consent to that or do they have an option of consenting to future analyses? So that's my first question.

DR. WU: Okay. Our consent form, which is pretty standard for a Biomonitoring California study, is, first, consent to participate in this parent study, and then there's a box to donate your samples for further analysis. We call out the PFAS and metals analysis as things that you know you're getting. But if people check the box to donate their samples for further analysis, then they go into the pool for anything else that we might add on. We're very specific that those are environmental

contaminants and that they will not include pharmaceuticals or medical-related analyses, but that it really is -- we're looking at specifically environmental contaminants.

I think we usually get most people checking that box off, maybe 75 percent of participants. So we should be able to do -- we should be able to have a robust archive of samples from this. We do have -- we are getting enough urine. We're working out the aliquoting sequence right now, but we will have aliquots set aside for maybe two or three additional panels, if we're able to do that.

PANEL MEMBER QUINTANA: And I also had a question. I know you went over this in November, but what were the targets for race, ethnicity, and income? Were they based on the census data from the region?

DR. WU: L.A. County, um-hmm.

PANEL MEMBER QUINTANA: And how well of your first set of participants -- you didn't break it down by some of those variables at this point?

DR. WU: We are trying to match L.A. County by race and ethnicity. There's a limit to the number of strata we can include, just given the number of samples we have. So what we're looking at is -- we're looking at demographic -- oh, I'm sorry, geography for the first

thing. We're -- L.A. county is broken down to service provider areas - there are eight of those - and then race and ethnicity. And then sex is the third strata we're looking at.

But even between just three strata, that's 80 bins that we're trying to fill with a prescribed amount. We are looking at the data with a lens of socioeconomic class just to -- just to see how we're doing, but we can't really do targeted recruitment over more than three strata.

As far as how we're doing, you know, I think our demographics so far are skewing towards highly educated and white, which is a problem. We have been trying really hard to reach out to community groups to try to boost our enrollment in different communities. It has been a challenge, and we put a lot of effort into making this linguistically accessible to people, and we really just have not had uptake in those things.

We -- our materials are available in 10 different languages. And we have some Spanish participation, but it's fairly low. We have Chinese, Vietnamese, and Korean participation, but again fairly low.

PANEL MEMBER QUINTANA: Have you --

DR. WU: Actually, Kathleen it's -- Kathleen has been doing our sampling. She might be able to address

this question.

DR. ATTFIELD: Hi. Kathleen Attfield. I'm one of the epidemiologists in EHIB, in the Biomonitoring Program.

So as Nerissa was talking about, we have these 80 bins that we're considering how people fall into them, and filling them up, and giving a bit of a buffer for overfilling. And our race/ethnicity breakdowns are Hispanic or Latino, white, Asian, black or African-American and then an other category. And we are oversampling in the black or African-American category and in the other category.

And I just want to add a little to what Nerissa said. While our Spanish speaker, like exclusive Spanish speaker, participation is low, we do have a fair number of Hispanic and Latino identifying people in the pool. I'm just going to be talking from our invited numbers, not, you know, the people who have made it all the way through the pipeline at the moment.

So I don't know how much detail you would like me to go into. Does that start to get at your question?

CHAIRPERSON SCHWARZMAN: If I could add, because I had the question that Jenny did. Is there anything us you could say about who you're missing?

DR. ATTFIELD: Well, I think Nerissa has pretty

much tackled a lot of that. We are skewing towards the more highly educated end of the spectrum. Our, you know, other categories, smaller racial categories, are low. But again, that's hard to put targets on those, because if we did it completely according to demographic breakdowns in L.A., we'd have two people, you know, out of the 500. You know, so we're already oversampling in that category.

The Hispanic or Latino targets would be about 220 of our participants. So that is a sort of lower populating category that -- it would be good to have more participants and more people coming into the pre-screen pool.

CHAIRPERSON SCHWARZMAN: Thank you.

Yeah, Jenny.

PANEL MEMBER QUINTANA: Just a quick follow-up question. Could you briefly comment on the types of community groups and events that you -- where you have conducted outreach? And have you had conversations about including those. For example, do you do that to PTAs? Parents tend to be fairly involved participants.

DR. ATTFIELD: I'm not as actively involved in that, so I will punt that back to Nerissa.

DR. WU: We have not worked with the PTA. We have worked with mostly community environmental groups. And then groups like PSR-LA, and we've worked through some

of the universities. There's a long list of people that we've conducted and a different range of outreach. There are some people who have been very actively partnering with us, and others who have just -- who have worked with us just to blast out an email, that kind of work.

So, I mean, clearly, we need to do more. And I think there are lots of reasons why we're not seeing the kind of participation we'd like. So it is -- it's something that's a priority for us to address in the coming month.

CHAIRPERSON SCHWARZMAN: Nerissa, are you already working with Black Women For Wellness.

DR. WU: We are, yes.

CHAIRPERSON SCHWARZMAN: Okay.

Tom has a question and then Mel.

PANEL MEMBER McKONE: So one of the things in a lot of surveys and questions how you ask the question is very critical. And I don't know if there's been any effort to look at your question. I mean, it sounds like the question is -- around like are you worried about chemicals in your body? And they may actually resonate in certain -- you know, more educated people might respond more to that.

DR. WU: Sure.

PANEL MEMBER McKONE: And then you might want to

just see if there's a way of phrasing that question that addresses the community. I know this from the Air Resources Board, in dealing with climate change, found out that you can't -- that communities are very responsive to the word "climate change", and others are more responsive if you frame it around community health or air quality.

I mean, it's the same issue, but it's how you present it. How you approach it is kind of critical to the response you get.

DR. WU: Sure, definitely. We did run a lot of our materials by focus groups, both in English- and Spanish-speaking groups. And I think the postcard -- just speaking about the postcard itself what that one line is kind of -- what we're trying -- counting on to draw people in. The postcard has very little information on it. And one of the feedbacks we got was, you know, I don't know what this is about. I can't tell if this is something I'm interested in.

So we are looking at, you know, for future regions and also for continued recruiting now is using the flier more heavily, which has a little more detail about what we're talking about. It's a difficult balance between brevity and getting something out that people will actually read and having enough content, so that people are attracted to participate in it.

CHAIRPERSON SCHWARZMAN: Mel, go ahead. And just turn on the button on the riser.

PANEL MEMBER KAVANAUGH-LYNCH: One option I was wondering about, since the people who are signing up online have a better completion and follow-through rate, at least preliminarily, have you considered at your community meetings, like bringing iPads and signing people up immediately there, so that they can get through the whole process?

DR. WU: Yes. Well, we -- people can't sign up immediately to the study right now. We do have electronic devices and paper for people to do the pre-screening right -- right there while we're there. And we have been able to get people into the pre-screening that way. We haven't really gotten to the point where we're actually just enrolling people straight off. We're still working this two-stage recruitment, where we want them in the pre-screening, and then control the selection of those participants.

And that may change over time. I mean, as we get towards the end of the study, we may start opening it up more fully towards anyone who wants to sign up. I don't know if that's -- if that's where we'll go. But if we get to a point where we are not going through that two-stage process, then sure we could -- we would definitely be out

in the field with help enabling people to sign up.

CHAIRPERSON SCHWARZMAN: Thank you so much, Nerissa. I think we'll move on to our next presentations, and we can return to these discussions in our session after the lab updates.

So I want to introduce our next two speakers. Dr. Jianwen is Chief of the Biochemistry Section in the Environmental Health Laboratory Branch at CDPH. And Dr. June-Soo Park is Chief of the Biomonitoring Branch in the Environmental Chemistry Lab at DTSC. And together, they will provide lab updates.

And then as a reminder, we have 25 minutes to continue the discussion after these two presentations.

(Thereupon an overhead presentation was presented as follows.)

DR. SHE: Good morning and welcome members of the Panel and audience. I'm Dr. Jianwen She, Chief of the Biochemistry Section of the Environmental Health Laboratory Branch.

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DR. SHE: Today, I will provide the update for EHL.

This include: Some recent staff changes, method updates, completed test, ongoing projects, recent publications, and finally our future and pending work.

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DR. SHE: First, I would like to take the opportunity to congratulate and welcome a few new visiting scholars. Mr. Lu. Mr. Lu is from China CDC, and Dr. Sun is from Beihang University. And Dr. Chunhua Wu is from Fudan University. Mr. Lu and Dr. Chunhua Wu is in the audience.

Thank you.

These visitors are here to learn about our new method, and they will help us to restore some of the methods, such as the PAH method, develop the program's capability for monitoring diesel biomarker, and work on untargeted analysis.

We recently lose the two highly valued scientists. I'd like to thank Dr. Rana Zahedi for her nine years of indispensable work with Biomonitoring California, most notably optimizing and creating a perchlorate and phthalate method. And also, Dr. Yu-Chen Chang for her work on non-targeted analysis and help with the phthalate method.

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DR. SHE: Since last SGP meeting, we have added cotinine in serum to our panels, expect -- expanded our environmental phenol panel to include BPA analogs, and purchased new instruments for metal analysis in the

perchlorate analysis.

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DR. SHE: This table is compare our cotinine's method performance with geometric mean of a study carried out by NHANES and also 95th percentile. So you can see our detection limit at 0.015 is capable to measure non-smoker exposure to the tobacco. So the geometric mean 0.041 is CDC for the non-smoker -- mean non-smoker persons.

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DR. SHE: We also added BPA analog, BPF, BPS, and triclosan. Similarly, they are compared with geometric mean and the linear range and the 95th percentile in the general population. So the detection limits is well below or within the lower range of the geometric mean reported by CDC. So we believe both methods can be used for the real sample test.

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DR. SHE: We also purchased a new instrument 8900 ICP-MS to allow us to improve our throughput since we can concurrently run blood and urine sample on two different machines. At the same time for some metals, you can see marked as red, we have a slightly improved the detection limit. That's where we may improve our end of the new elements or detected -- eliminated some non-detected

values.

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DR. SHE: Here I show the -- what we completed since my last report. So since the last SGP meeting, we completed the following projects:

For the firefighter studies, we're able to analyze 83 samples for BCEP, BDCPP and DPP, these OPFRs. Eighty-three samples is the number of samples available for us to do this analysis. Firefighters have overall 101 Samples. We also completed 218 samples for perchlorate analysis. Laboratory conducted some study, which is collaboration between Stanford University and our laboratory to look for the relationship between the selenium and the health condition of pregnant women. We analyze 102 samples for cadmium, mercury, and selenium.

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DR. SHE: We also completed our ACE Project II. For this project we measured 99 samples for blood, 100 samples in urine for the metals and creatinine. About -- we found about 72 samples out of 100 have the high level of the arsenic, which is above our cutoff values. So for these 72 samples, we did a speciation analysis.

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DR. SHE: Currently, we work on the three major projects that Nerissa already showed. The CARE Study

that's the last one. And also, we work on the California Firefighters Study, and East Bay Diesel Exposure Project.

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DR. SHE: For the Northern California Firefighter Study, we collected 180 firefighter samples involved in Napa/Sonoma fires of 2017. For our laboratory, we need to determine the metals in blood and urine for the metals listed on the slide. We also do the creatinine analysis.

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DR. SHE: For East Bay Diesel Exposure Project, the sample collection is underway. We plan to collect 50 child pairs twice, that's 200 samples. For another five families, we collected 60 daily samples.

For the project, EHL's focus will be management of samples, which include aliquot urine samples, measure creatinine, and specific gravity, ship samples to University of Washington for the metabolite of 1-nitropyrene's analysis.

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DR. SHE: For the CARE Study, we plan to collect about 300 to 500 participant samples. EHL will work on the test of a few metals in blood and also in urine, plus creatinine and specific gravity analysis.

Also, we try to create central sample management facility for this project, so the -- which include finding

a physical location, set up the biorepository space, and then use barcode for tracking the samples.

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DR. SHE: In last year, laboratory able to publish five papers with our collaborator or ourselves. You can see the topics include a lot methods, PAH, HERMOSA Study continuation, analytical method. In the future, we still -- we try to publish the relevant topic we are working on.

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DR. SHE: Here is our future works. One study called MACOTA, which is we use our recently developed cotinine method in serum. So this project will do the cotinine analysis in relationship to the occurrence of autism spectrum disorder. This is a collaboration between laboratory of EHIB.

And we already finished method validation. We also did a pilot study with 10 samples. We measured the cotinine, compare with the CDC's measurement. And these are archived samples. Our comparison shows very good correlations between these 10 samples.

For subset of CARE Study, we try to measure a select panel of organic. For example, depending on the program and the availability of resource, may include a lot of -- not limited to the phenols, pesticides -- maybe

pesticide and other program deemed to be appropriate.

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DR. SHE: As you know, in last two years -- actually one year, we lost a few positions. Due to the limited-term position ending, we lost two positions in July 2017. With this loss of position, we lost some capability. We lost PAH, non-targeted screening capability.

In the upcoming July of 2018, we will lose one more position, limited-term fund ending. We expect -- we will possibly lose or affect phthalate method and perchlorate method. A temporary fix, temporary Band-Aid fix is we have the visiting scholars, but they are limited time, will be here for less than one year. We are able and we hope we can restore PAH and non-targeted screening. But long-term fix, still need a program able to get more funds for us to restore the position and the resource.

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DR. SHE: With all of this, I conclude my update. And if you have questions or we can have questions after the next speaker.

CHAIRPERSON SCHWARZMAN: Thank you so much, Jianwen.

We have 10 minutes or so now for questions, and then we'll move on to the next lab update.

Questions from the Panel?

Jenny has a question. Go ahead.

PANEL MEMBER QUINTANA: I just had a quick question kind of jumping ahead of myself. But do you feel that the current blood tubes, and amounts, and urine volumes and everything being collected in the CARE Study in L.A. are suitable for future laboratory analyses?

DR. SHE: I first can comment on the urine. I think that there are -- we all considered future expansion of the -- include organic panels that should go for the panel we are already underway. But for the panel we do -- we never test, I'm not sure on that one. Yeah.

CHAIRPERSON SCHWARZMAN: I think you said this, but you mentioned the metals testing you've done in the CARE Study, if -- sorry I should have found the page. And is this -- yeah, the metals, so the POPs are coming next, is that what you're saying about the future work.

DR. SHE: Yes.

CHAIRPERSON SCHWARZMAN: Okay.

DR. SHE: Nerissa, is that correct?

DR. WU: I had talked about doing metals first and then a subset of POPs for the Northern California Firefighters Study. For CARE right now, we have committed to metals, PFASs, and for 150 of the participants, we'll also be doing 1-nitropyrene.

The hope is that we can add on other analytes. As Jianwen said, we're not sure what those are yet. Maybe pesticides or phenols, depending on what we deem appropriate.

But as far as the vials go, we are aliquoting them out so that we do have adequate volume for a number of different panels. And we've just learned that this -- you know, our sampling and aliquoting method doesn't preclude VOCs. So this afternoon's panel will be very interesting.

CHAIRPERSON SCHWARZMAN: Thank you, Nerissa. It was my mix up.

Oh, yes, please, Carl.

PANEL MEMBER CRANOR: I do notice -- excuse me. I'm losing my voice. I do notice that there's a fair amount of testing of metals. Is that for public health reasons or for instrumentation reasons, or -- I mean, I assume you're testing the things you are most worried about, is that true? Can you speak to that?

DR. WU: I would say that there's a combination of those reasons that you've cited. Yes, there are a number of very acute health issues associated with metals. And it's a clear public health message, which is easy to convey to the public, and a concern to many different communities.

It's also a panel that's a concern across the State. So we were looking for things that were -- that were not just region specific but statewide concerns. It is also a method that's -- it's tried and true. It's a very reliable method. The lab is great. They are able to analyze large numbers of these quickly. And we do want to get results back to people in a timely fashion.

CHAIRPERSON SCHWARZMAN: Maybe we can get back to Carl in the discussion session, if there was something else you had in mind, in terms of priorities.

Other questions from the Panel about the lab?

Sara.

MS. HOOVER: Hi. It's Sara Hoover, OEHHA. Hi, Jianwen.

I thought people might be interested to hear a little bit more about the MACOTA Study. You just said very briefly that it's a collaboration with EHIB. I thought maybe you could give a little bit more detail about that study or maybe Nerissa could, I don't know. Just who the collaborator is and --

DR. WU: Just to clarify, it is not biomonitoring EHIB. This is Gayle Windham who is part of the Environmental Health Investigations Branch at CDPH, but it's not with the biomonitoring group, so I don't know a whole lot about it.

DR. SHE: Actually, that's not -- I do not feel comfortable to answer this question. I think we will get back for the people have a specific interest, yeah.

CHAIRPERSON SCHWARZMAN: Any other questions before we go on to the next part of the lab update?

Okay. Thank you so much.

(Thereupon an overhead presentation was presented as follows.)

DR. PARK: Okay. I'm on, I guess.

Good morning. My name is June-Soo Park again. I'm going to give DTSC lab update. I'm from Environmental Chemistry Lab.

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DR. PARK: So as usual, I'm going to start with a status report, including status change of progress with the sample analysis and method development, and some findings from our recent publications and works; and then update on our non-target screening work. Lastly, I'd like to address -- like Jianwen did, I'd like to address some capabilities and capacities we may lose soon.

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DR. PARK: We have new staff. Dr. Ting Jiang. She wanted to come here, but she -- all of a sudden, she felt sick yesterday, so she couldn't join us in person, but I'm sure she's right now listening to this through

webcast.

She joined us last month as a scientist funded by CDC cooperative agreement. She studied -- she graduated Duke University last December. She was a synthesis chemist there, worked on organic dye molecules for solar energy harvesting. Since -- this may be some change for her from synthetic chemist to analytical chemist.

We have to see, you know, the how -- where -- how -- where she may fit herself in. So her tentative assignment will include PFASs, and OPFRs, and some non-targeted analysis.

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DR. PARK: Since last June, we completed California Teachers Study. This is the largest study we have ever done. We reported PFAS, PBDEs, PCB/OCPs from more than 1500 samples. We also done first ACE Study last summer, and then second ACE Study early this year. From about 100 samples each, we reported PFAS data only.

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DR. PARK: Some other projects in progress. We are currently MAMAs. This is archived maternal serum. We already done first MAMAs 2015. We are doing -- currently doing MAMAs II. For PFAS, we haven't started yet, because we are waiting our new automated method established. For the PBDEs, we completed 166, about 80 more samples to go.

And for FREES - this is intervention study to remind you - we are halfway through for the PBDE analysis. For OPFR, we are getting there.

For CARE Study, we are waiting for sample arrival. We're expecting to receive 300 to 500 samples. For firefighters, we are also waiting for the decision to select how many samples to be analyzed for what chemicals. I'm sure there will be little bit of a funding situation.

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DR. PARK: We've been participating in round robin for our two new method. What is called ENTACT. This is U.S. EPA's non-targeted analysis collaborative trial. Twenty-five international and U.S. labs been participating. We are suppose to analyze human serum, and wrist band, and house dust. So far, we were informed only three labs have submitted the final report that includes us.

So as soon as we uploaded our results to their link, we received email feedback from them. The number of chemicals we identified from our instrument that LC-QTOF was very close to what they have, which was very encouraging for us. But we still have to wait until they finish their evaluation, and all the reports from the participating labs.

Second on this is -- it's called external labs

validation study for PFAS in water samples. Again, organized by U.S. EPA, this is a nationwide water method validation study. To my understanding, we are the only California lab among 10 labs selected nationwide. We will be measuring 24 PFAS. So we'd like to take this opportunity as an alternative way to validating our new expanded serum PFAS method.

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DR. PARK: Turning the page to recent findings. I recall one of our colleagues, either Peggy Reynolds or Myrto Petreas, introduced this publication on -- ES&T sent a letter -- I'm sorry, I notice this morning, it's Hurley et al. 2016. It was typo. My apology.

They showed the -- back then, they showed the drinking water as a route for PFAS exposure. Briefly, using the data from the California Teachers Study also they're using the participant zip code to match with the -- their public water system. We found the participant who have the PFAS they detected in their water system showed significantly higher PFOS and PFOA levels compared to the participant who have not. So 29 percent higher for PFOS, 38 percent for PFOA.

Then we followed up the study to take a closer look. We collected 35 tap water -- actual residential tap waters from all over the Northern California, Bay Area,

Sacramento area, even Lake Tahoe. We also had some matched serum available in-house. So so far, out of seven pairs, seven match samples, we found some newer PFAS, like a short chain C4 to C6 PFAS, like butanoic acid, hexanoic acid, and sometimes precursors, 6:2 fluorotelomer sulfonate. They were frequently detected in both serum and the drinking water samples.

So Dr. VillaRomero took this data -- preliminary data to present at the last SETAC, November 2017. We are planning to collect more matched serum, and also the -- we are planning to expand this study to whomever interested in, including our biomonitoring group first.

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DR. PARK: This is another paper published early this year. Again, using a large data set from California Teachers Study, we reported PFAS time trend from 2011 to 2015. I took two figures, one for PFOS, PFOA on the right-hand side. They are the two major -- two major classic PFAS. So their annual percent change shows -- still show very nice declining trend, ten percent every year. We've seen this happen to the -- most of the other classic PFAS too we measured.

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DR. PARK: But PBDE trend seemed a little different. This is another paper we published early this

year. So when we look at the -- some of the five major PBDE, the trend was -- they dramatically declined from 2008 to 2011. After then, they become a plateaued toward recent years.

Of course, I have to point it out, this is different in the population from teachers. Also, the small scale, first time -- young and first-time mom from San Francisco.

But, you know, the -- we also published PBDE trend out of Teachers Study early last year. It does show the PBDE trend very similar to this one.

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DR. PARK: So we have the PFAS topics. Recently, we've been invited to give a talk in various conferences and workshops. The -- you know, the one thing I noticed, the audience have been, you know, they're becoming more diverse from Superfund Program, and the public health folks to the solid waste management folks and even housing developers.

That I can take a message from that, you know, the -- it's more people are becoming more serious on the PFAS issue nationwide.

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DR. PARK: So update on the non-targeted screening work.

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DR. PARK: As you may recall in the previous SGP meeting, the -- I believe there was one before the last one, I introduced some -- our non-targeted screening work on cats. Back then, I compared hyperthyroid cat against a non-hyperthyroid cat for feature distribution. I -- back then, I explained the feature -- what the feature was -- or the features of the potential compound not yet identified. That's what I explained.

Also, you can take the features are the -- some potential chemicals waiting for the -- waiting to be identified.

And then I also showed a simple Venn Diagram out of a comparison between two cat groups. Sixty-nine features were uniquely detected in hyperthyroid cat, and 57 were also detected only in normal cat.

When these two cat groups was statistically compared, more than 400 features were detected significantly higher in hyperthyroid cat by more than two times. So we took this 400 features, and we've been trying to identify them by focusing more on the -- some industrial chemicals rather than some naturally occurring compound including endogenous compound.

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DR. PARK: So, so far, we identified

organophosphate flame retardant detected higher in hyperthyroid cat, and three PFAS, four drugs, and 14 personal care products, three pesticides.

But you may already notice the huge green piece of pie, you know, that indicate the majority of those features remained unidentified. That's why I -- we collapse, you know, the old unknown compound into the big group endogenous and unknown compound. They will stay there until they are identified.

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DR. PARK: So our current non-targeted screening activities. We mainly focus on the -- focusing on serum screening. The -- by using the similar method adapted from the cat study.

So one is we've been exploring some novel chemicals of health concern in maternal and cord blood. And the other one is we will be looking into some chemical markers for breast cancer among three female occupational groups, woman firefighters, office workers, and nurses study.

And we will be looking into screening firefighter samples. Firefighters who participated in the Northern California wildfire activities. The timing will be dependent on the funding situation too. This is not a biomonitoring study, but in parallel to the firefighters.

We also had stormwater collected right after the wildfire, two time period. We will be screening them to too to the -- investigate some bay ecological effect by wildfires.

Of course, all this work based on the collaboration with our folks, UCSF, UC Berkeley, and the San Francisco Bay Estuary Institute, many others. We cannot do it alone. But still, we still have a lot of work to do. Really, really, you know, too many things are on our plate.

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DR. PARK: But we have a little bit of a situation. As Jianwen mentioned, the situation is coming ahead. We have our colleagues, two key biomonitoring staff, they have -- their positions expire in a few months. I still don't believe that's going to happen. But in worst case, some sample analysis will slow down considerably, unless they stop. That will include persistent chemicals like PBDEs, OPFRs, PFAS.

And this will create some domino effect. You know, the -- we won't be able to spend much time to develop method to do chemicals. So non-targeted screening will be the -- will have first hit, and then we won't be able to measure any new chemicals identified from non-target screening work.

We also won't be able to expand the -- our OPFR method, also the PFAS method. That -- you know, the -- we won't be able to be proactive against any new or alternative replacement of these chemicals.

So one of the consequences, you know, that I can see directly is that DTSC won't have information, you know, the -- regarding exposures to toxic chemicals in consumer products.

I think this is my last slide. Thank you for listening.

CHAIRPERSON SCHWARZMAN: Thank you so much for that update. Just to tell everybody where we are in the plan. We have 10 minutes for Panel questions about this last update. And then we'll have a public comment period. So that's a reminder to everyone in the room and folks listening on the web to, if you're in the room, get a pink card from Duyen. And if you're online, you can email your public comments to biomonitoring@oehha.ca.gov. And we'll get to those after our Panel questions in 10 minutes.

Carl.

PANEL MEMBER CRANOR: I noticed in some of the papers, and you mentioned it here, that some of the substances for which you're testing have plateaued. It may be beyond what you're doing. You're just telling us what's in people's bodies. Andy idea why they're

plateauing?

DR. PARK: I showed you it's -- plateauing means the -- you mean, timing? Are you asking the timing?

PANEL MEMBER CRANOR: Also that's maybe not so much the timing, but that suggests that there's a background level that's going to maintain the concentrations.

DR. PARK: I have to be --

PANEL MEMBER CRANOR: And the public health question is how worrisome is that, if at all? But is it -- is there -- is there background concentrations that are keeping the body con -- bodily concentrations at a constant -- at a comparatively constant level.

DR. PARK: I think that's a great question we also are asking to ourselves. But that's definitely -- that level is definitely separate from the background levels. You know, the many -- yeah, many people -- many epidemiologists, also exposure scientists, they assess risk against that level of PBDEs or lower. You will find hundreds of papers, you know, they're doing it using the data a lot below -- a lot lower PBDE levels than that.

So I can tell for sure that's different from the background levels. California --

PANEL MEMBER CRANOR: It's higher than background.

DR. PARK: Well, of course. Of course. PBDE in California is always a lot higher than your background levels. So some levels to the -- you know, for -- some lab background -- not like us, but some -- you know, the lab, they still can do that. They still can do that. You know, the -- so I think I can tell for sure that's very separating from the background levels. Thank you.

DR. WU: If I could add to that response. I think with something persistent like PBDEs, you might find that the exposure source is shifting over time, where now there is this reservoir in the environment and it's become more present in things like food sources. There's -- it's in dust. It will change the exposure picture, but this is a good argument for not putting very persistent chemicals throughout the environment.

PANEL MEMBER CRANOR: Well and a piece -- a piece of that too is that I don't -- some of the early papers that I read suggested that the PBDE's deteriorate over time, and they may become more toxic. I mean, maybe some of the lower -- the PBDE 47 might be much worse than the decas and things like that.

CHAIRPERSON SCHWARZMAN: Did you have something, Sara?

MS. HOOVER: Hi. Sara Hoover, OEHHA. I was just going to add to what Nerissa said. Agreed, that was one

thing I was going to say. And also, it's a classic pattern, actually, for like PB -- PCBs. You know, you see the decline and then you start to see it tail off, because it's still out there for a really long time. So we're starting to get into that part of the curve for PBDEs.

PANEL MEMBER CRANOR: Thank you.

DR. PARK: So also for your information, the figure I showed you was the five major PBDEs, usually found abundant, you know, compared to the other congeners.

CHAIRPERSON SCHWARZMAN: Tom had a question. Did you?

Oh, no. Then maybe I could add on to that -- that same issue. I was wondering if you have -- these are results that are specific to California, and you mentioned in some of your publications on that topic. I'm wondering if those include a comparison to national -- nationwide data in NHANES biomonitoring? You mentioned that PBDEs, for example, are typically always higher in California.

DR. PARK: Yeah.

CHAIRPERSON SCHWARZMAN: So -- but from -- I don't mean a subset of the NHANES data, but rather the analyses that you've done, does it include comparisons? It's okay. I can look at the paper, but if you could tell me, if it includes a comparison to NHANES biomonitoring data?

DR. PARK: For this, we always include NHANES data when we publish, you know, our data. So I think you can -- you can refer to that paper.

CHAIRPERSON SCHWARZMAN: Great. Thank you.

DR. PARK: I can forward that to you too. Thank you.

CHAIRPERSON SCHWARZMAN: Okay. Thank you.

Yeah, José.

PANEL MEMBER SUÁREZ: I had a quick question about your cat case control study, which is pretty interesting, and I like the approach. At the same time, it opens a lot of questions, right, having 400 compounds that are unknown is what they are ultimately.

Have you considered about kidney function in relation to the cats? At least clinically, typically, hyperthyroidism is associated with low glomerular filtration rate kidney problems. And that could be perhaps an explanatory reason for this. Maybe it's lower clearance of these chemicals. Have you thought about that? Did you look -- did you discuss that?

DR. PARK: We thought about it, but, you know, our capability couldn't reach that kind of level, because we are chemists and not toxicologists, but I think it was a good point.

They -- we collect their blood samples while they

visit, you know, the clinics. You know, they tested all the kidney function, of course, the thyroid function too. So we do have some data for the kidney function. So I think we may be able to associate some chemical levels with the kidney function, at least some case control, yeah.

PANEL MEMBER SUÁREZ: Yeah, I think that would be very interesting, because otherwise it's the chicken or the egg thing. And then because of these chemicals that they're -- that they have developed thyroid problems or is it because they have thyroid problems that they can't excrete these chemicals that we're seeing here.

DR. PARK: A domino effect, yes.

CHAIRPERSON SCHWARZMAN: As long as we're on that study, I had a question about it.

If we could look at the non-green compounds, the ones that you were able to identify, you mentioned that your filter was sort of -- that these are at least two-fold higher than the non-hyperthyroid cats. And I wonder if there were any that were significantly more than two-fold.

DR. PARK: Yeah. Yeah, of course, you know, that 400 features include 69 uniquely detected in the cat -- hyperthyroid cat. Not only that, but also the minimum is two-fold. Many other confounders are a lot higher than

that.

CHAIRPERSON SCHWARZMAN: I guess I was wondering from the subset that you have identified, not the 400 that are yet to be identified. Do you -- maybe you don't know off the top of your head, but it's in the data, which of those are significantly more than two-fold? Which are the highest?

DR. PARK: Sorry, I think I --

CHAIRPERSON SCHWARZMAN: Okay.

DR. PARK: We do have a chemical list. I do have it in my computer, but some -- the PFAS -- I remember the PFAS with the amine group showed significantly higher. I don't -- I don't even -- can pronounce the name of the pesticide, so -- but I do have at least -- I'm willing to share with you which at least, I have, yeah.

CHAIRPERSON SCHWARZMAN: I was just curious whether there were ones that really rose to the top in terms of a differential? And that would help us with that question too that José had of are those renally excreted chemicals or not?

Anyway. An interesting series.

Carl.

DR. PARK: Thanks for the good idea, yeah.

PANEL MEMBER CRANOR: I want to go back to your exposure to PFASs and drinking water.

DR. PARK: Um-hmm.

PANEL MEMBER CRANOR: You may know this, and some people in the audience may or may not know it, but there was a major tort suit in Southern Ohio, West Virginia, Northern West Virginia from the PFOA that DuPont dumped into the environment with whole communities contaminated. So there may be some interesting data there for comparison.

It was sufficiently bad that people were contrasting diseases. And DuPont finally settled for two-thirds of a billion dollars for what they have done in terms of contamination and damage to people.

So there's a database there. There was a science advisory panel that looked at it. I don't know what the concentrations are -- were, but it may be of interest to -- given the studies that you saw.

DR. PARK: Sure. I just want to add what you just commented. You know, we also tried to help other state for these PFAS analysis. One of them is that we help New Hampshire. They -- many people got contaminated throughout, you know, the Air Force or the -- when they tested their AFF in the fire pit.

So I think they -- you know, the Governor, you know, announced all their citizens to be tested for PFASs. And, you know, all of a sudden they are talking about

10,000 samples. You couldn't do that, because biomonitoring has a -- biomonitoring sample -- the California samples as a priority, so we helped a little bit, but we couldn't do more, yeah. So but we are willing to -- we're still sharing the -- as the CDC helped us, we also consult to them, you know, the -- any technical expertise they need or on the phone and sometimes they come to us, yeah.

CHAIRPERSON SCHWARZMAN: Sorry about that.

Jenny.

PANEL MEMBER QUINTANA: Hi. This question is really to you and also the other laboratory presentation. So both of you pointed out some significant challenges with reductions in funding and loss of positions. And maybe this question is for the Chair here, but are we going to have a chance to formally discuss options, and will the Scientific Guidance Panel be able to formally express concern about this?

CHAIRPERSON SCHWARZMAN: In terms of a chance for a discussion, we're currently in the 10 minutes of questions for the lab update. So we'll have a significant time and I can bookmark that as a topic for discussion.

Other questions regarding the lab update?

Yeah.

PANEL MEMBER FIEHN: Yes. So you mentioned that

there are -- as there's an ongoing ring trial from the national EPA on non-targeted screening that you have uploaded results. Can you tell what the aims were of study, and the questions they had, and a little bit like -- you said that they were responding that your results were similar to what they expected, if I understood correctly. Can you elaborate on that?

And then secondly a little bit to that -- to the question that you we -- that we just had about staff, I -- you hired new staff and the staff had worked on organic synthesis, but not on analytic chemistry. So I wonder how fast you can train this person to do this high quality research that you do?

DR. PARK: For the second question, I think we -- that's why I said we have to see how fast she can fit in, because she's not the only one, synthesis chemist in our house. Our director, my boss, he's also the synthesis chemist trained at UC Davis. Also, I have another colleague with the same background. But they're doing great. They're doing great.

So the question is, you know, how much she is going to like it? That's the challenge for us. Yeah.

And for ENTACT, yeah, I think -- before I, you know, joined the -- this round robin, we had the same question. Also, I showed you how complex this round robin

is. You know, the EPA -- even though EPA organized this one, but this is kind of too many variabilities. You know, Dr. Fiehn, you have so many toys. You know, the LC-QTOF, and orbitrap, and some people use a GC and LC. Just kind of a flood that they -- I'm expecting they will receive a flood of data -- the data from all the participating labs.

One aim I understand is that -- that's why the -- they're trying to find some common ground, build some common database they can refer to. At least that's one of the goals they want to achieve from this round robin.

DR. SHE: Our lab -- sorry. Our laboratory actually also participated, but a chemist immediately left after we signed the contract with EPA. So I think for the aims, like June-Soo said, they may want to see how they plan to form -- different pant to form and approach can complement each other. Another is just like I remember you gave a talk a few years ago about the quality control issues in this unknown discovery process that make sure that put no chemicals. Can you find it? And also maybe try to develop some criteria what's the finding really means through this survey. This is the point I'd like to end.

CHAIRPERSON SCHWARZMAN: Sara Hoover.

MS. HOOVER: Thank you. I wanted to circle back

to the PBDE trend because I forgot to ask you a question. And I, too, can go look at the paper, but if you can remind us, between the last two data points, the 11, 12, and 14, are those two different groups of women or the same women that you re-sampled?

DR. PARK: Oh, no, that's two different groups, yes.

MS. HOOVER: Okay. So that's another issue --

DR. PARK: Yeah, another issue.

MS. HOOVER: -- is you're actually comparing two different groups of women.

DR. PARK: Thank you for pointing out, yes.

MS. HOOVER: And then do you know the N of those two groups?

DR. PARK: N is between 30 to 50 each group.

MS. HOOVER: Okay. So it's small.

DR. PARK: Yeah, I told -- I mentioned that, small -- much smaller scale, yeah. But we controlled the same hospital, same -- the similar age range, and first-time mom. Also collected blood samples from the second trimester. Yeah, at least the people controlled what they can control.

CHAIRPERSON SCHWARZMAN: I had a question related to that study too.

DR. PARK: Yeah.

CHAIRPERSON SCHWARZMAN: So this is looking at sort of the legacy perfluorinated compounds. And I know that various studies are also looking at the newer PFASs. And I wonder if, off the top of your head, from any of the studies you've done, if you can say anything about relative trends within the newer PFASs?

DR. PARK: Are you stalking about other people's work or the -- our own data?

CHAIRPERSON SCHWARZMAN: Well, either if you know about them or I could ask for other people's --

DR. PARK: Right now, the trend-wise, I don't -- I don't recall. I've seen many publications chasing the trend for the newer -- you know, the more recent PFAS. That's what we are trying to do. You know, the first try to identify those -- you know, the short-chain PFASs and some pre-cursors.

We will be eventually getting there, but I'm not sure the other people also start to present some trend paper for newer PFAS. If -- thank you for that. I think I will -- as soon as I go home, I'll sit down, I will Google it.

(Laughter.)

CHAIRPERSON SCHWARZMAN: I don't know if other people have --

DR. SHE: May I?

CHAIRPERSON SCHWARZMAN: Yeah, please.

DR. SHE: For the time trend of PBDE or PCB or other chemicals, I think you said you use the sum of 5 congeners for PBDEs, for example. Like Carl already pointed out, maybe -- when the time is going, some PBDE may have degraded, so may look for the individual PBDE, instead of all five of them, because I saw your level stable at slightly below the 50 ppb. And then previous date that you show come from 90 ppb.

So now stable on the 50 ppb may allow you to look at individual levels to see if that may give you some indication. Is that secondary source, like Nerissa mentioned or degradations or something else.

DR. PARK: You read our paper, right?

(Laughter.)

DR. SHE: Yeah, I got this from your paper.

DR. PARK: That's very great point. That's why the -- we did analysis for the individual PBDEs too. I think if you read our paper published earlier 2017, that paper is quite interesting, because PBDE 47 showed that similar pattern, you know, showing it plateaued. But we actually observed 153 going up -- slightly going up at the end.

So we kind of had a long discussion, come up -- yeah, came to the conclusion this is kind is a -- kind of

a sign for the shifting the source, instead of, you know, the kind of direct exposure from the house dust. Maybe it's coming from the -- some food intake, like fish. So that's why we are carefully looking at that trend individually.

Thank you for that. Yeah.

CHAIRPERSON SCHWARZMAN: Other questions before we move to public comment, and then we'll go into discussion. So we have more chance to review all this.

Okay. Why don't I -- I'm going to call for public comment then. Anybody in the room has given you comment cards?

MS. KAUFFMAN: No.

CHAIRPERSON SCHWARZMAN: No, nothing in the room.

Anything from the web? Who is looking at the web?

MS. KAUFFMAN: No.

CHAIRPERSON SCHWARZMAN: Duyen also.

Okay. In that case, we're going to move directly on to our discussion. And I would say this, we could -- this should be broadened beyond the laboratory updates, also to the Program updates in general. And we have all of our presenters from this morning here to help address questions or reflect on these discussions also.

And I would add that this is not just a Panel

discussion, it's also open to all of the people here present, so please feel free. And maybe we'll start with this topic that Jenny raised.

You know, it's a perennial issue, which is the resources, I always am just amazingly impressed by the work that is done by Biomonitoring and by both labs in light of limited and shifting resources, and the coming and going of staff who take with them expertise about panels, and how nimble you are able to be, and how much you are able to preserve in light of limited resources.

And I think one of the things the Panel kind of always considers is how can we support you, you know, both in looking for obtaining funds or more kind of from a advocacy support perspective. But anyway, maybe I would turn it over to Jenny for the thoughts that were triggering your nomination of this topic of discussion.

PANEL MEMBER QUINTANA: I guess I have a question for all of you, which is have you had thoughts about best ways to leverage it? And maybe this is already on the website, and forgive me if it is, but if you remember the National Children's Study collected a bunch of samples - physical samples and biological samples - and then they came up with a very -- a procedure, which is on the website now, to how do you write grants paying for analysis of these samples, and here's the process, here's

how you do it, here's how you collaborate.

And I'm wondering if we have a formal -- kind of a formal process to encourage other researchers to perhaps write grants, and then come up with the money for the laboratory to perform analyses? Have you thought -- or is that already in place in a formal fashion? I know informally it happens a lot on a case-by-case basis, but literally a link on the website. You're a researcher. I'd like to investigate this question with your samples. Here's how the process -- things like that.

DR. WU: I think I'm a little confused by your question. Are you asking if we are applying to work on the National Children's Study, or are we -- do we have a plan to kind of model something after the Children's Study to encourage collaboration within our program?

PANEL MEMBER QUINTANA: Sorry if that was confusing. I was thinking of it more as a model of how one can formally make it possible to get expertise and money from other sources to contribute to the laboratory to perform some analyses through a funded grant mechanism.

DR. WU: I think we have done some outreach in the past --

MS. HOOVER: Get closer to the mic.

DR. WU: There has been a process in the past for collaborators to apply to the -- sort of apply to the

program and propose collaborations. We haven't -- we haven't had that outreach in a while. And, I mean, we do get lots of, I guess, proposals being vetted by us -- or run by us is -- like is this something we can participate in?

One of the difficulties with our limited-term Band-Aids has been that it's hard for us to project out what our capabilities will be. So we have lots of interesting work being proposed to us, but if we don't know if we'll have the analyst in a year, it's really hard for us to commit. And we don't want to say we'll do something and then mess up the timeline of a project when we can't -- when we just can't commit to it.

So it's a little bit of a cycle that we've got -- that we are forced into, because it would be really -- that is a really good idea to sort of put ourselves out there and be participating as part of other studies.

Unfortunately, I think we're a little bit hampered from doing that, because of our -- because of our particular situation.

But maybe you guys -- I mean, I think there have been a couple proposals that have come across our desks recently, and I know the answer has been we don't know if we'll have staff for this. But I don't know if you guys want to comment on that a little, or Sara could comment.

MS. HOOVER: Yeah. Nerissa, I was just going to add to what you said. Part of the issue that we have is because of the nature of State funding. So it's not like somebody can raise funding and easily give it to us and then we can go on our way. So really the core issue for the Program is sustainable State funding.

So we've had various sources of funding coming in, including wonderful CDC funders. But always, the concept was to build a sustainable program funded by the State. And that's really what's necessary for us to do our jobs effectively. So, you know, just recently, we were approached -- I mean we were approached, because we have great labs. We have great staff. People want to work with us.

But it's not -- if somebody says I can give you this money, I can't then produce the staff, you know, to do that work. So we're very hampered with the limited staffing. We cannot take on these new projects. We don't -- we can't necessarily write the grants and have the money come in. So it comes back to just it's a State program. It needs to sustainably funded by the State. Like that's -- that's essentially my conclusion after all these years.

The only other side note I wanted to say in terms of what's on the website, we do have information for

researchers about contacting us. Originally, we did a bunch of RFIs. Part of the Request for Information about people having archived samples that they might want to work with us on, that was for laboratory development. So that was kind of a pro bono situation, where we wanted samples to help develop the lab. Again, we're kind of not in the position to do that now.

CHAIRPERSON SCHWARZMAN: Can I ask a follow-on question that you each might have something to contribute to is, something that seems like that might enable the Panel to help you is if -- do you have a wish list? Do you have like the top things that you can't do right now, because you don't have funding, or personnel? Because that could enable -- I know that your -- the Program isn't a position to advocate for itself, and -- but maybe there's a role that, as Scientific Guidance Panel members, we could take, if we had a more specific wish list of the things that in particular the Program could be doing, samples you already have, or cohorts you could expand, or populations you're, you know, almost able to reach, or sore of opportunities that are passing you by that we could help make the case for.

DR. WU: We don't have a list like that as such. It's a great idea though to sort of prioritize the things that we are lacking, so that we could communicate that

better to you and other advocates. I think it's a list that changes quite often depending on -- I mean, there's so many things we would like to be working on that -- and depending on particular staff that are -- you know, it's kind of an ever-changing landscape. But as that changes and as there are new chemicals that come across, and new projects, that list does shift around quite a bit.

But I think that's a good idea. We do sort of an annual reexamination of our priorities, and that would be -- that would be a great product of that to communicate out.

CHAIRPERSON SCHWARZMAN: One of the particular reasons that I ask is, you know, we all may have contact at various times with State decision makers who express their priorities to us. And if we have an easy way of tying what we believe about the Program's needs into State decision-maker's priorities, that could -- you never know which of those would payoff.

Carl.

PANEL MEMBER CRANOR: I want to echo though Megan's and Jenny's comments, because it's not only members of the Science Guidance Panel, but the public interest groups that were behind the formation of this Program that can provide some help. I mean, this is a political issue, right?

My understanding is that the funding needed for this program is actually pretty small. I mean, you do an admirable job with what you have, but it wouldn't take much more to expand those efforts. And I know that they've been told this at the high levels of the Governor's office. But given the picture of the budget that was presented earlier, it does look like this is reaching a point where that, as Sara put it, the baseline really should be raised, because you need a reliable set of institutions and staffers to run them that has been pretty variable.

DR. WU: Yeah, I think that's true. And to add onto what Sara has said, one of the challenges with advocacy groups or an attention being paid to a specific issue, like a top 10 list of what's hot now, is that it's a slow moving boat. I mean, we are -- a lab method takes a while to develop. It takes a long time to train staff, and to do all the QA necessary to have a method ready to go public with it.

So if something is raised to our attention, and like great we have funding for it, it may be a couple years down the road. And by then the attention has shifted somewhere else. We constantly are being pulled in different directions because we're very interested in everything. And one of our challenges is to keep our eye

on things -- is to kind of weigh the chasing all these different interests versus really sticking to what we're pursuing at the cost of not being able to answer some very proximal questions. But it's difficult, because it does take a lot of time to raise that expertise and to get --

PANEL MEMBER CRANOR: I think I was suggesting something slightly different. They -- obviously, they have particular interests, but their -- the sum of the support groups that led to the formation of this Program could represent a political constituency, as it were, for the -- to talk to the legislature, to talk to the Governor's office, not for their particular projects, but to give you better resources to do the various jobs you can do, and maybe be able to respond to some of these things.

To go back to Megan's point, that's why it would be very important to have a list of what you couldn't do, would like to do, is terribly important to do, so that you have a set of talking points to go forward.

Years ago, I heard Dick Jackson give a talk about how he ran things at CDC. And he said, always have your -- always have your various kits with you, have them prepared and ready to go. So think of the political kit you might put together to serve these purposes.

CHAIRPERSON SCHWARZMAN: Yeah, just to echo

Carl's point a little bit, I wasn't meaning that you should pick the programs you want, you know, the world to fund you for. It's almost more like having examples. That if we were to go out in the world and say here is what Biomonitoring California would like to do, if they had the funding. If that funding came through a year later, you would have a different wish list, but it gives us some specificity to say look at the power that's sitting here untapped is kind of what I mean, rather than committing to a specific project in advance.

DR. WU: Okay. That's a -- those are both excellent points. And we have been told, both internally and externally, that scientists are not the best message writers, and I think it's something we need to work on.

PANEL MEMBER CRANOR: Or get people who can do a better job of that. I really think that -- this is not denigration, but you need to convey what you could do, and not necessarily responding to particular projects, but importantly public health things that could and can be done, but you just don't have the personnel.

And then you need to find somebody that can -- that knows how to express that message in a way that legislators, the Governor's office, and people like that will respond to.

CHAIRPERSON SCHWARZMAN: Jenny.

PANEL MEMBER QUINTANA: Hi. I just had a question to educate myself about funding. You said that State funding is necessary, Sara, and to all of you. Is it possible, just theoretically, if funding were set aside under AB 617 for air monitoring communities, if they wanted to do biomonitoring for air contaminants, can that money transfer over? I just don't even know how it all works. But can that somehow come across different silos that way?

MS. HOOVER: I'm just pointing over to Lauren to -- if -- and also just to note, we will be talking with AB 617 this afternoon, you know. And I'll just say my comment and get back to your question. Great idea. And I want you all to know that -- what Lauren mentioned, we're going to take our 10th anniversary pages, our various top accomplishments, we're going to make them into like one-pagers that can be used as little elevator speeches, or little fact sheets to handout. So we're going to start working on that after this meeting.

I think that we can look at what can we do in the near term, what can we do in the long term, what's going to take a lot more resources? We can sort of categorize things like that. And that's some of the informal discussion questions that we're going to talk about this afternoon is what can we do, for example, to support AB

617 and show our value in the near term, what can we do in the long term that requires more resources?

So that's kind of how we think about it. We're always trying to say, yes, and jump in and help with existing resources. And that's what we did with the wildfire. You know, that was actually a huge, huge effort on the part of Nerissa and others in EHIB, and the labs, and I was part of it too. You know, we all just jumped in. We wanted to do it, so we found a way to do it.

Now, we're hoping to set up a protocol going forward so if it happens again, we'll be able to get out in the field more quickly. But that's the kind of thing that's going to take more resources. So I think that -- but we're going to try to, you know, kind of daylight more of all of those things that we are doing, that we have done, and what's possible with -- even with the existing resources. I mean, we do a lot with our base funding.

And that's -- I guess, I'll also let Jianwen and June-Soo comment on this. But I know that one thing they're going to focus on now is a lot of cross-training, so that as we, you know, lose analysts, more analysts will be able to do more of the methods, which is actually challenging. It's quite -- it takes a lot for a method to be maintained. I've been educated over the years with all that it takes.

So, you know, we're looking at -- I mean, we're going to keep going, because we're very scrappy, and we just, you know, go for it. But, yeah, the -- I appreciate your desire to help us and support us. And we'll try to give you what you need to do that.

CHAIRPERSON SCHWARZMAN: Tom.

PANEL MEMBER McKONE: I want to follow up on the wildfires. Was that -- so far you've only been able to do firefighters though, right, when you mobilized, or have you done communities?

MS. HOOVER: (Nods head.)

PANEL MEMBER CRANOR: So one thought I've had, which happened during the fires, and I don't -- I haven't thought of all the details, but from a public health perspective, the exposures to those levels of particulate matter in the communities is really significant. I mean, Napa was really hitting high numbers. Southern California, the same thing.

And, I mean, there's two things. It's very important from a public health perspective to have good information on what people were exposed to, and we don't. I mean, basically if you follow -- we were following the numbers that were being posted by the Bay Area Air Quality Management District. What they're doing is they're kriging from about, what, 10, 12 monitors.

And so even -- you know, so people were reading that and thinking they had really accurate information on their exposures, but they didn't. It's just computer generated kriging, and we had some people doing actual data.

But I think more importantly if there's someway -- so there's two issues to this. One is it's important from a public health perspective to really have better information on the community's stress during these events. And secondly, it might be a way to really enhance the value of the Program, because I think a lot of -- I mean, I got a lot of people asking me what do these mean, what are these exposures, how high are they, how relevant are they?

And better than having lots and lots of air monitors would be having some people with some real measurements.

Now, I know that's easy to ask for. It's probably really hard to do, because in reality it would take -- you can't just go out and get volunteers in 10 minutes or so. But at least one of the things we know about fire events is unfortunately they have were quite long, both the Southern California and Northern California. The fires lasted for enough days that if we had some ability to mobilize the communities and the

interest, we could have gotten people engaged probably in giving some blood or urine samples.

Again, it's just something to think about as a way to actually get some really valuable public health information. And given that we have the experience with the firefighters, it's not something, you know, brand new. It's something that has to be extended to highly exposed individuals.

DR. WU: Yeah. I think that's a really good point. There is obviously a lot of concern for the community members themselves, both the airborne particulate matter, but then in the days ensuing, all the ash. What's the exposure from the ash lying all over the school yard, or on sidewalks, or on my house, with my dog tracking all the ash into my house. So there are a lot of these questions that really require more examination.

Biomonitoring has not been doing much with that, but the -- there are others in the Department of Public Health who are starting to examine some of those questions.

And we would like to. I mean, I think our emergency response IRB that we're trying to put together with the protocol ahead of time will take some of these scenarios into account, so that we are better prepared to go not only to workers, but also to communities to try to

get a better idea of what the exposure looks likes.

We do have in CARE when we were writing up our final questionnaire, the wildfires in L.A. were breaking out, and so we did add a question on about what was your experience in the fire? Were you actively evacuated? Were you working on the fires? There were a series of questions trying to gauge what people's exposure might have been to those fires. And we will have -- we'll be able to take a look at that once we have the analytical data.

CHAIRPERSON SCHWARZMAN: José.

PANEL MEMBER SUÁREZ: Coming back to the budget pieces. So starting for the next budget cycle, which starts in the summer, what's -- given the budget cuts of course, how much staff do you expect could be potentially be reduced ultimately to be able to afford it?

DR. WU: So in this next budget cycle, the change is that we lose the limited term positions that were created in a budget change proposal which went from 2016 to 2018. So I believe it's one position from each of the labs, which is following on -- or you have two positions that are coming out and one from EHL. And this is coming on the heels of this fiscal year, where EHL lost two positions and ECL lost -- was it also two this last year that you lost --

DR. PARK: We didn't lose any.

DR. WU: Okay. So a total of three per lab over the last two years that's been reduced.

PANEL MEMBER SUÁREZ: And what does that translate to with your capabilities ultimately? Does that mean you won't be able to analyze certain compounds, or there's some priority ones that you do want to keep or what's your approach, your strategy?

DR. WU: Do you want to answer that?

DR. SHE: That's use the number --

MS. HOOVER: Microphone.

DR. SHE: Use a number of the total staff was an estimate. Okay. And the baseline we have at the first year, we have five staff, one administrator. So the laboratory, four total staff. With limited term and on, we ended three staff. So almost half capabilities or half resources we lost. Total we have seven, and then -- plus, I am a supervisor, I did not do so much, so the real workers reassigned lost half of them. So that's the estimate.

PANEL MEMBER SUÁREZ: So what's your strategy in that regard? Are you planning on then offering to be able to -- or reduce the number of compounds that you'll be looking at, or just reducing the number of samples that you can run? What does that actually translate too now in

the practice.

DR. WU: Well, I think both of these two reported out there are specific panels that we were losing the capabilities for. We lost our PAH analyst. We lost our phthalates analyst recently. And it is difficult to -- I mean, you -- just to maintain the instrument without doing any analyses, there's a fair amount that has to be done, plus the training of the analyst. And these guys can speak more eloquently about this. So we can't just have, well, you from over here go to over to this bench and run these other samples.

It's a little difficult, but they will be doing more cross-training so we don't completely lose that capability, though there's still a time and, you know, there is a resource of we don't have enough people to cover all the instruments, but at least we won't lose that institutional knowledge, and the actual method itself.

But there are things that we can't run when we talk about projecting out what we can run for CARE, we have the samples. So it should be great, we've done the expensive part of collecting the samples, let's run them now, but we don't have the people to run them for all these analyses.

DR. SHE: Also, if laboratory lost staff under the critical point, you may not be able to operate, and

then -- so I think with three staff or four staff left, you barely can effectively operate. And then -- but on the other hand, like -- so we do instead of passive waiting within our own very limited capability, we try to still create opportunity. Like Jenny mentioned, can we write a small grant, which don't resolve the issue, but supplementally.

So we try to work on the National Children's Study we try to get the grant. Unfortunately we did not get. So only laboratory can work as a small scale. For example, we may get a fellow, we may get a visiting scholar, temporarily maintain the program going. But it's fundamental to make this program reach its original law, required goals still need to be met.

DR. WU: If I could add, it is also not just staff. The labs are very expensive to operate. The instruments are very expensive, the maintenance contracts. And so in order to keep a method up and running there's a certain baseline funding you need to have, if you don't keep those instruments running. If somebody comes and says, well, I would like you to run these panels, and here's some money for it, you still need to have the capability to turn a switch on to start running them. So there is a baseline amount of funding you need to keep that capacity up.

PANEL MEMBER SUÁREZ: It sounds like there is -- there could be potentially that amount of funding. I mean -- so I'm trying to get back to Jenny's original point, so how difficult would it be or how much would you favor having supplementing your budget with a fee-for-service type approach?

I know it's dif -- a little bit difficult, because it is a State institution. But take the CDC laboratories, they do a lot of subcontracting out through their CDF foundation, which then channels the fund into the laboratories. Could that be a potential model to help you, you know, through these times?

DR. WU: Well, I think there are limits on how we can charge for services. We can't profit off of services. And we are not a commercial lab, and so there are limits -- you know, the money that is charged if somebody brings samples like New Hampshire asked us to run some samples. That money might pay for the actual analysis, but it doesn't pay for all the overhead that goes into maintaining that equipment and the space for the laboratory and send everything else that goes into, you know, like the lights, you know, electricity, all the stuff that goes into running a lab is quite expensive.

But the State, as a State institution, can't really bill for that kind of stuff. We're not -- we're

not a private institution, so there is that challenge.

PANEL MEMBER SUÁREZ: Yet, somehow -- and this is just a question. I don't really understand the finances behind it, but I know that, as I was saying, the CDC laboratory, they do huge contracts all the time, because they're very well known to do -- to do some excellent work.

And I think that that's something that your labs have that capabilities of that, and has that reputation as well. And it could be something that could be perhaps followed as a model that they're doing, because they do channel a lot of funding through their foundation, and they have different methods to do that.

CHAIRPERSON SCHWARZMAN: Yeah. Great. Just one second. I just wanted to follow up on that issue of overhead. I'm surprised that the State can't charge it like the university -- the state university can charge overhead.

DR. WU: I am not the correct person to be answering this question.

CHAIRPERSON SCHWARZMAN: Okay. Okay.

(Laughter.)

PANEL MEMBER FIEHN: I would also -- I would also like to second that, you should really explore that. I mean, we run the same model. We have grants, but we also

have a huge arm of service -- fee-for-service costs. And they really supplement the running costs, the maintenance costs. The worst is not running the instruments, right, because you don't have the staff or so.

So I think it is a good model to do. And, of course, you can also say for a certain -- you know, for every sample we run, there is a certain fraction of maintenance cost. There's a certain fraction of energy costs. This -- you know, so that is definitely possible, at least at university, to charge.

DIRECTOR ZEISE: So I think this is -- this is something that the Program can go back and explore more. It's an excellent set of suggestions.

CHAIRPERSON SCHWARZMAN: Yeah, Martha.

DR. SANDY: Martha Sandy with OEHHA. I just wanted to say, I agree this is something to think about, but I think there's a certain level of baseline funding you need. You need the position authority, and you have to have the funds to have those positions, in the first place. And then once you're running, pretty well, then if we could come up with some fee-for-service or work and collaborate and get the money in, then that helps.

But we -- I think that we're worried about the critical baseline funding that we haven't really achieved with the staff that can do the panels -- the analyte

panels.

CHAIRPERSON SCHWARZMAN: Thank you for reiterating that Martha. I think it's helpful for us to keep in mind.

Sara.

MS. HOOVER: Yes. Sara Hoover, OEHHA.

Meg, I just wanted to circle back to one thing that you and Jenny asked about which is what could you guys do? And I wanted to let you know that in the past, SGPs have written letters. And, you know, you can't share it, you know, the way that it works, because it's a Bagley-Keene issue, but you could have one or two of you work on it, draft it, and then show it at a public meeting, and have you all sign it at a public meeting. That's an option that you could consider doing.

And then I don't know if there's anything more on this, but I wanted to segue into another announcement.

CHAIRPERSON SCHWARZMAN: Sure. Thank you. That is the kind of thing I had in mind, and I was specifically sort of asking for input on that. Like, if you all have examples that we could then use on our own to do that kind of thing.

MS. HOOVER: Yes, we do have past examples. And, in fact, we have, I think, an example that actually went into one of our leg reports. Then there's other examples

where just letters were directly sent to like the heads of the departments. So I think there's various options, and we can kind of refresh what current procedures are with that, and let you know.

CHAIRPERSON SCHWARZMAN: Great. Thank you.

I also had one question or thought about. I'm so grad to here that the program is thinking about this sort of anticipatory approval and plan for emergency projects. And one of the things that occurs to me is it was sort of -- the thought was triggered by one of the publications in -- I think it was in June-Soo's -- no. It was in Jianwen's laboratory update. This last one on the publication list, that's looking at particulate matter exposures, and lipid peroxidation when cabin filters are used among drivers.

We've talked on this Panel a bunch about our interest in intervention studies - thank you. That's the word I was looking for. And it occurs to me, whether that's something we could keep in mind for other, whether it's responding to wildfires or other environmental sort of emergencies that would be -- have relevant biomonitoring aspects to keep the intervention study model in mind to do with air filters in child care facilities, or schools or work places, or homes as a potential element that could be planned for in advance, and therefore maybe

possible at the time.

Jenny.

PANEL MEMBER QUINTANA: I just had a follow-up comment or question about the IRB process. You talked about getting emergency IRB, but I don't -- if it's -- I believe you can get samples and analyze them if it's not for research purposes and not being published. So, I mean, you can have -- go and get -- I believe I'm correct, but I may not be correct. You should check, but I think if you're just doing it for public health reasons, like you said, public health emergency, if a wildfire, I believe you can get samples, and analyze them, and display their results with -- if it's not for -- specifically done for research, but if you have any comments on that.

DR. WU: Yeah. And actually I did have a conversation with our State IRB about this, and they would have -- they would have reviewed and likely approved an emergency response IRB for us. I think because we did also want to collect exposure information and we have a results return obligation, so there is -- we wanted to collect participant information, it sort of triggers a higher level of review, which might have taken a little longer.

So, yes, we could have gone out to get those samples, but because we -- we anticipated wanting to add

on a fair amount of information, we chose not to go that route. And I think with what we're talking about, with preparing it, having a number of questionnaires where we've thought through carefully, well, what might be the exposures we're concerned about in a fire, or in a flood, or in, you know, these different types of emergency response situations, it will help us be a little more prepared for like what panels might be appropriate, and what kind of questions we want to ask, and who is the population we're looking for. So I think it will help us actually design it a little better to do so ahead of time.

PANEL MEMBER QUINTANA: My point was actually that it's the intent for research that triggers IRB, I believe, or human resources -- I mean, human research protection programs.

DR. WU: That's right.

PANEL MEMBER QUINTANA: So if you literally do it for public health reasons, I don't -- I'm just curious. I don't know the answer, but I'm thinking that we might be thinking are there times when you're not doing for it research reasons, and could that be a pathway that you might activate for this program, if that makes sense?

DR. WU: I believe the requirement that the program has of getting participant identifiers triggers the research -- it triggers the check box for research.

So if we were to do it as an emergency response, not research, and an expedited review, we would not be able to get participant information, and then we wouldn't be able to fulfill our obligation to return results.

So we've gone through -- we've tried that route a couple times with other types of projects, not emergency response, and we always end up back in the research box.

PANEL MEMBER QUINTANA: Okay. That's different than universities handle it, but yeah.

CHAIRPERSON SCHWARZMAN: Yes.

PANEL MEMBER McKONE: Yeah. I want to follow up on Dr. Schwarzman's comment about air filter deployment, and -- in emergency events or wildfires. And there is a protocol, the Aliso Canyon event -- well the State didn't provide the air filters, but the State provided what I thought was really good information about the kind of air filter to get.

And we're on video, I won't mention product names, but there are products that really work and there are products that don't. And it's important for people to know, just having that information and having access to them.

The other thing is if it's particulate matter, and you give somebody a new air filter that has a HEPA filter around the outside, and a carbon core in the

middle, so the chemicals are in -- and then some have permanganate and other chemicals in the center, but the outer core, if it's new, you can take a core sample out of that HEPA filter. And if you know how long it's been operating, you can get a good estimate.

If you have biomonitoring, even very limited biomonitoring, you have those two things together, you have some information to start talking about population exposure. So it's a very powerful merging of two pieces information, neither one of which would be all that powerful alone. So there's some advantages to having just a little bit of biomonitoring, and a little bit of -- or even more air filtering, and some understanding of how it was deployed. And it's a great public health service to communities. And we know how to do it, because we did it -- or, I mean, we have -- roughly, the State knows how to do it, because it was done at Aliso Canyon.

DR. WU: We'll put it on our list.

CHAIRPERSON SCHWARZMAN: I also think -- I would kind of vote for -- not that you really get to choose any of this right now, but just to raise the issue of an intervention study that particularly targets people who wouldn't otherwise be able to afford an air filter, which was, you know, like the focus of the intervention study with couch replacement and foam replacement in public

housing. And it may also open up other opportunities for funding.

I'm sort of trying to play through in my head right now whether there's a way it could tap into AB 32, disproportionately affected communities funding. The link to AB 32 maybe a little bit difficult, unless you're just doing wildfire -- increased risk of wildfires, et cetera. But anyway, it may be worth thinking about a little bit.

And likewise, from a funding opportunity question, I was thinking about whether this -- look at sort of pre-setting up emergency response protocols might also help you access emergency planning funding, which I think is generally more available.

DR. WU: It's something we're looking into.

CHAIRPERSON SCHWARZMAN: Okay. Good. Great. Okay. Sara.

MS. HOOVER: So just to add one little thing about the intervention, we are going to talk about, you know, intervention studies as a possible long-term effort this afternoon.

I'll also say that as part of the East Bay Diesel Exposure Project, we're actually going to be trying to look at ways to engage with participants about improving air quality, including finding ways with air filters and that kind of stuff. We are doing air monitoring, paired

with biomonitoring in that study. So we're pursuing some of these ideas.

But I want to segue real quickly before we end into some good news. Yea. We just posted, and this morning the listserv went you -- you may not have seen it, but we posted all of the data from Pilot BEST and Expanded BEST. So those entire data sets are now available on the web.

And I want to especially credit, we didn't -- forgot to announce some of our new staff as part of Nerissa's talk. So I want to really credit Jennifer Mann who's here. She's a new Research Scientist IV. She came from UC Berkeley, but she used to work at DPH and OEHHA, so we all -- everybody knows her, and she's been enormously helpful. So Jennifer, with Dan in my group, they worked really hard, really quickly to get that data set posted. So that's really exciting.

And then I also wanted to acknowledge Russ Bartlett, who joined my group as a Senior Environmental Scientist. And we got him from CDPH, so it's all in the family.

(Laughter.)

MS. HOOVER: Russ is working really hard with Duyen on the East Bay Diesel Exposure Project. So we're still doing a lot of great things with some really great

new staff.

CHAIRPERSON SCHWARZMAN: Thank you, Sara. Could you just refresh everybody's memory about what BEST means?

MS. HOOVER: BEST is the Biomonitoring Exposures Study. And it was conducted in the Central Valley in collaboration with Kaiser.

So did you want more than that? If so, I'm going to defer over to --

CHAIRPERSON SCHWARZMAN: Maybe just key analytes.

MS. HOOVER: It's a huge long list of analytes actually. So basically at that point, we were measuring every panel. So I can't rattle it off the top of my head, but if you go to the website -- go to your listserv notice, click on the button, you can see all of the analytes, but -- you know, metals, pesticides, PFCs, phenols. Just everything we can measure, we measured in BEST, basically, I think that's fair to say.

Nerissa -- Duyen is nodding her head. So Duyen said --

(Laughter.)

MS. HOOVER: Okay. Yeah, so it's an incredibly rich data set. And Jennifer -- we've done -- initial, we did quite a lot of analysis of the metals and PFCs data, so the listserv talked a little bit about that. And we have some posters and presentations. But Jennifer is

actually going to delve even more deeply into that data set and look at more of the analytes.

And we're hoping in November to have two talks, one will delve into the ACE Study, which is the Asian/Pacific Islander Community Exposure Project. And we'll have a lot of analysis of that. That's been an incredibly interesting study, elevated metals in disadvantaged communities. And then Jennifer will present on BEST.

So we're making a lot of progress in looking back at the results we already have.

CHAIRPERSON SCHWARZMAN: That's wonderful. That's great to hear. It's time to break for lunch.

A couple of announcements before we do. So we have an hour and 15 minutes for lunch, but that's what -- that we're going to resume at -- promptly at 1:30, so please be back by 1:25. There is a nearby quick dining option. Scrubs Cafe is a five-minute walk away, and there is a map to that in your meeting folder. Come back by 1:25.

And then just as a reminder for Panel members, please comply as usual with Bagley-Keene requirements and refrain from discussing Panel business during lunch and the afternoon break.

So with that, we'll conclude the morning session

and resume right at 1:30 thank you.

(Off record: 12:16 p.m.)

(Thereupon a lunch break was taken.)

A F T E R N O O N S E S S I O N

(On record: 1:31 p.m.)

CHAIRPERSON SCHWARZMAN: All right. I think we'll restart the meeting. Thank you, everybody for coming back.

This afternoon, we have this special session on community exposure to air pollutants, and the role of biomonitoring. We're going to kick off the session with a -- with a presentation by Yana Garcia, who -- and she's going to give us an overview. She was appointed by Governor Brown in June of 2017 to serve as Assistant Secretary for Environmental Justice and Tribal Affairs at the Environmental Protection Agency, CalEPA.

And prior to joining CalEPA, Yana was an associate attorney at Earthjustice in San Francisco, and a staff attorney at Communities for a Better Environment serving in Huntington Park and Oakland.

Her legal practice areas have focused on environmental justice issues, civil rights, land use, toxics and chemical disclosure, oil and gas extraction, and crude transport.

(Thereupon an overhead presentation was Presented as follows.)

CALEPA ASSISTANT SECRETARY GARCIA: Hi. Good afternoon. After lunch panel is always fun.

(Laughter.)

CALEPA ASSISTANT SECRETARY GARCIA: Thank you for having me. My name is Yana Garcia, Assistant Secretary for Environmental Justice and Tribal Affairs at the California Environmental Protection Agency. I was here at the November meeting. And I've been very excited to come back to you all to talk to you a bit about some of the intersections, some of the complementary programs that we have at CalEPA, and in particular today to talk to you all about AB 617.

Just waiting for the slides.

AGP VIDEO: They're loading.

CALEPA ASSISTANT SECRETARY GARCIA: Okay. Thanks.

So before I start, I just want to pull back for a moment and just give a little context for the role of the Office of the Secretary and CalEPA with respect to all of our boards and departments. The Office of Environmental Health Hazard Assessment and Air Resources Board who's here to talk to you a bit more about AB 617.

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CALEPA ASSISTANT SECRETARY GARCIA: Out of the office -- I don't love this graphic, so I apologize for the intimidatingly large Governor bubble.

(Laughter.)

CALEPA ASSISTANT SECRETARY GARCIA: But out of the Office of the Secretary, we oversee and coordinate the activities at five boards and departments, which includes the Air Resources Board, but also the Department of Toxic Substances control, which shares a relationship with the Biomonitoring Program -- has a relationship with the Biomonitoring Program, the State Water Resources Control Board of course, Department of Pesticide Regulation, CalRecycle -- and I feel like I'm forgetting another one. OEHHA.

(Laughter.)

CALEPA ASSISTANT SECRETARY GARCIA: Of course. Hello.

(Laughter.)

CALEPA ASSISTANT SECRETARY GARCIA: But as I'm sure you could imagine, biomonitoring has a lot of complementary, I think, aspects to the data that we're gathering. Biomonitoring California inputs the interventions studies. Some of the baseline data that we're building is very relevant to the work of not only Air Resources Board, but Department of Toxic Substances Control, as we're updating and enhancing permitting regs; the State Water Resources Control Board, as we're continuing to refine and enhance how we look at delivering

the human right to water across the State; certainly, the Department of Pesticide Regulation, as we approach risk management decisions and mitigation guidance on agricultural chemicals and pesticide products.

So I say this just because I hope that we can continue this conversation, and that we can come back and revisit how some of the biomonitoring date is also relevant to other programs.

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CALEPA ASSISTANT SECRETARY GARCIA: Now, I want to ground some of today's conversation and what we talked about back in November. As I'm sure you'll remember, Deanna Rossi had a really interesting presentation that I was able to join - I was really grateful for that - about some of the surveys that she did, some of the input that she got from environmental justice stakeholders throughout the State. And so I summarized some of the big picture points that she found, and that her colleagues found throughout their work in surveying 64 individuals, 48 organizations throughout eight regions. Air quality concerns, and an interest in air quality issues by far rose to the top, 73 percent, closely followed by air -- by water quality and then pesticides at 56 percent interest.

I think this is not a huge surprise. When we think about environmental justice issues and cumulative

health burdens throughout our State. I think air quality is among the top concerns, because it's so tangible, and it also leads to such kind of clear health effects for many environmental justice communities.

And we've seen a lot of that with respect to AB 617. The negotiations, of course, that led to the adoption of this bill, that led to the Governor signing it into effect, clearly had to do with hopefully listening to some of the environmental justice stakeholders bringing into consideration some of the issues that affect groups on the ground, front-line communities as we're continuing the Cap and Trade Program.

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CALEPA ASSISTANT SECRETARY GARCIA: And coming into some of the common recommendations that the groups made, and that Deanna Rossi reported in the last meeting, they had a lot of input on research and methods for the Biomonitoring California project, and many of the programs that we're doing. And those were to use community-based participatory methods in our studies; to add more chemicals to the CARE Study specifically, but I think probably throughout; and to consider studies that will lead to policy change.

And I want us to really focus on this when we think about how we're approaching AB 617.

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CALEPA ASSISTANT SECRETARY GARCIA: The requirements of AB 617, which I'll go into in a second, are very much based on monitoring and air pollution reduction. And we're emphasizing in many of our -- in much of work and many of our meetings with key stakeholders the need to take the data inputs that we're getting in AB 617 and create immediate policy change, push for immediate actions to actually reduce community level air pollution.

So this is kind of a text-heavy slide, but I just wanted to lay out some of the key requirements from AB 617. And those are, first, to develop an emissions inventory. And this would be a public-facing inventory that anyone would be able to access, that deals with criteria -- toxic air contaminants, and criteria air pollutants. And by October 1st, which is very rigorous, a rigorous schedule, as you'll hear from Heather in a few moments, to prepare a statewide monitoring plan for community level air monitoring, and also to prepare a statewide strategy to reduce emissions, and to update that strategy every five years.

The final point that we'll emphasize throughout this presentation -- I'm going to leave probably four and five off -- or to Heather to sort of answer questions, but

is also to provide communities with technical assistance, community support. We've now gone out with a community air grants requisition for proposals from community groups, emphasizing the need for partnerships, and coalition building.

Those community air grants range between $50,000 and $900,000. They will be used for all kinds of information gathering, and sort of uplifting of community voices community information, and really empowering communities to be able to participate in some of the processes before their air districts, before their local land-use authorities, before the State to ensure that our job in implementing AB 617 is really moving forward with communities as the focus.

The final two that we won't go into as much is adopting an expedited schedule for retrofit technologies in nonattainment basins, and also to increase by five-fold existing penalties for non-compliance.

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CALEPA ASSISTANT SECRETARY GARCIA: Now, I always begin our environmental justice presentations, mostly those that I do with community residents and community members, with the importance of our stories. And generally, I'm talking to, of course, folks on the ground in front line communities, and emphasizing the fact that

our stories really matter, and should matter to regulators.

And more and more particularly what we see with projects like Biomonitoring California, our stories are becoming data stories. And the last thing we want to do is create a sentiment among community residents, and I think some of this we heard back in November from some of the EJ stakeholders, that we're being studied to death. That we just have study after study, and data and more data to show that the problems are persisting.

And I think that one of the things I'd like for us to think about as we keep -- as we continue into thinking about AB 617 and the potential overlap with some of the Biomonitoring California work is that the data stories really need to push that action. We really need to start pushing for reductions, and using our studies, our intervention studies in particular to show the effectiveness of some of our efforts to reduce air pollution over time.

I think there are some data points that we can use in the more immediate future with respect to AB 617, but I'd also like us to keep thinking about how we can think of the Biomonitoring California work over the longer term

As AB 617 is implemented, not just in this first

year, but over time in the years to come, how we can use continued data inputs over that same time.

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CALEPA ASSISTANT SECRETARY GARCIA: Now, these are some ideas that I've had about how we could potentially use the Biomonitoring California information and projects in the context of AB 617. And I'm just throwing those out there as nascent ideas - hopefully, we'll be able to build upon them - but really focusing on prioritizing communities.

So one of the things that Heather will talk to you more about are the processes that we're undertaking, the analytic processes that we're undertaking to prioritize communities for both air monitoring and community reduction plans.

And some of the data that we currently have, for example, the data from the West Oakland Diesel Particulate Matter Study and the Southern California CARE Study can really be used for that purpose. I think one of the -- one of the -- going back to the theme of moving forward and not studying our communities to death, I mean, these are communities that have already had quite a bit of studies done. We have air monitoring information. We now have health-based information. And this has been information that's been gathered over a long period of

time. So not waiting for new monitoring data or new information to come to light, but really taking early actions now.

And this one of the things that the Air Resources Board is really working on with all of the air districts. The role that the air districts play in the implementation of AB 617 is key. So the relationship between not only the State and the air districts, but community stakeholders and the air districts is going to be very important.

Equipping communities with better information, and actually supporting the use of this information to push for early actions. This was also something that was asked for, of course, in the November meeting, and using community level baseline data to measure the effectiveness of existing programs, and to measure the effectiveness of our community air pollution reduction strategies that will come down the line.

Informing what we can and should be monitoring for. This is something that I hope we can -- we can enhance down the line as well. The monitoring data that we're gathering through AB 617 I think should enhance what we currently know, based on current monitoring data, but also fill in data gaps. So where we're seeing that there may be health impacts that may not be immediately

answerable by existing data, how we can figure out where the missing links are in terms of information I think will be really important.

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CALEPA ASSISTANT SECRETARY GARCIA: And I want to leave just a couple minutes for any questions that you might have for this particular introduction. I know Heather will go into much more detail. But if anybody has any questions for me, I'd love to take them.

CHAIRPERSON SCHWARZMAN: Yeah. We have five minutes or so for questions before we move on to the next presentation.

Sara -- oh, Jenny, sorry, go ahead while Sara gets to the microphone.

PANEL MEMBER QUINTANA: I guess I had a general question about how 617 might play out for communities that don't have a voice. What I've seen on some early reaching out to communities was the well-organized communities were being, you know, encouraged to come forward and do monitoring. But even in my own County of San Diego, we have several environmental justice well-recognized communities with -- well organized, including the one where I work in San Ysidro, but there's other ones looking around that I was going to take to the local air district and say these are -- I think, these are environmental

justice communities, but right now they don't have a voice.

I mean, is there like an agency or a group within the agency that might kind of take on being their representative or keep them involved in the process, or if you have any comments about that?

CALEPA ASSISTANT SECRETARY GARCIA: So the Office of Community Air Protection, which Heather is a part, is doing a lot of work on not just reaching out to communities, but really making sure that some of the ideas that are coming from environmental justice stakeholders are being reflected in how we're implementing AB 617.

At this stage, we have some pretty general concepts about how we want to see the requirements of AB 617 unfold over time.

I think one of the things that we hope will grow in the future are the community air grants. The community air grants, I believe, are flexible enough to allow for some really creative work to be done on the -- at the ground level.

One of the challenge areas I think for us will be to fund groups that may not already be sort of administratively equipped to take that kind of money. They are substantial grants. I run an environmental justice small grants program out of the Office of

Environmental Justice at CalEPA that's $50,000 grants, and those are difficult for small groups that are struggling. And that may not have the existing infrastructure to take that.

But one of the ideas that we've kind of played around with a bit is thinking about having more of a State presence, whether that be a physical body, a physical staff person in some of the air districts to really work with communities over time, not just on sort of one-offs to build a community air pollution reduction plan or to develop a monitoring plan, but actually be there to answer questions, be there to work over the longer term with air districts.

I think another thing that we can and are looking to do is flesh out what some of the process requirements are going to be for each air district. I think that will be really important. Some air districts have, you know, environmental justice process requirements already incorporated into how they operate. Whether those are working well or not is an open question, but some air districts have nothing at all. They have far less stringent public process requirements.

So I think the other thing that we're hoping for, and really working with the air districts to implement are better public process requirements, better requirements to

do outreach, better requirements to bring in community voices, and actually bring in community solutions. I think community ideas for what solutions they want to see with respect to not just stationary source air pollution reductions, but also mobile source air pollution reductions, what programs they want to see in their community, what changes in land use they might want to see. And so those will require a lot of State input over time

CHAIRPERSON SCHWARZMAN: Sara.

MS. HOOVER: Hi. Sara Hoover, OEHHA.

Thank you so much for coming. And it was great to see you reflecting back on, you know, some of what Deanna talked about in terms of our EJ listening sessions. And I just was curious to know if -- in your role, if there's any specific community priorities you're already aware of, you know, high priority air pollution issues that you're hearing about in your role, or if there's anything surprising in Deanna's talk or other things you might add just from your own perspective.

CALEPA ASSISTANT SECRETARY GARCIA: Nothing necessarily surprising in Deanna's talk. I like -- I found it to be pretty consistent with what I hear on a regular basis.

I think in terms of priorities, the priority that

we're placing on addressing cumulative health burdens, cumulative air pollution issues is something that's reflective of what we hear from the community. That's certainly there, I think, in our approach to AB 617.

Dealing with pollution around the ports is huge. That's really big. And I'll say that what I hear from many environmental justice stakeholders is that we shouldn't have to wait for -- to, you know, address port-related and freight infrastructure-related air pollution. And I think that's true. I think we see that in West Oakland. I think we see that in Long Beach and Los Angeles.

And then slightly less so, but we still have some good data out in some of the inland ports, like the warehouse centralized areas in Riverside and San Bernardino. It's no surprise that, you know, the Mira Loma monitor that's administrated by -- or administered, I'm sorry, by South Coast Air Quality Management District has been giving us a lot of information about how poor the air pollution issues are out there. And they likewise shouldn't have to necessarily wait. So I hear a lot of that.

I also hear a lot of interest in looking at pesticide related issues through the AB 617 lens, and also looking at some of the oil and gas related issues that we

see in San Joaquin Valley through the AB 617 lens, whether that be from a land-use perspective, using the data that we have in AB 617 as one more tool to push for buffers -- health protective buffers, particularly around sensitive receptors in the San Joaquin area, or, you know, looking at ways that we can reduce pollution otherwise coming from those sources.

And the pesticide issue is also interesting. I mean, I think from a cumulative health burden perspective, it's hard to deny that there are existing problems there, that there are existing data sets that we have that show how serious the issues are with respect to pesticide exposure, particularly for children, for some of the most vulnerable among us.

And, you know, when I talk about how our environmental justice sort of stories or community-based stories matter, I mean, often times those are stories of our health, of our children's health, our family's health. And those are data points certainly, but it's also -- it's human beings. And I think that's where the Biomonitoring California Program really comes into play, because we have that human-centered focus.

Although, it is incredibly scientific and sometimes difficult to explain to communities, I think that many community residents respond to the

human-centered focus of the Biomonitoring California work, so that's where I think the great synergy could really come from.

CHAIRPERSON SCHWARZMAN: Thank you so much, Yana.

I have -- I have a couple questions that we'll -- I'll defer until the discussion, because they're more appropriate. But I'm particularly -- maybe I'll just hint at one key question, which is, you know, I hear you -- one of the things I hear you saying very strongly sort of on behalf of communities is -- was also from the November session about the need for action rather than study. And yet, Biomonitoring California is a studying program.

And so that doesn't mean that there aren't useful things that biomonitoring can do, and that's what this session is about. But I guess I want to ask us to try to think really critically about how study can be designed to inform action, even where it doesn't necessarily look like action on its own, and/or who biomonitoring can partner with to make action come out of the studies that biomonitoring performs.

Maybe there are some links we need to do more specifically there. So maybe I could just seed those as questions for a later discussion.

CALEPA ASSISTANT SECRETARY GARCIA: Thank you.

CHAIRPERSON SCHWARZMAN: Thank you.

I'd like to introduce Heather Arias -- sorry -- who will talk about transforming California's approach to community air pollution. Heather is Chief of the Community Planning Branch in the newly created Office of Community Air Protection at CARB.

Her previous experience at CARB includes serving as Chief of the Freight Transport Branch, where she oversaw the development and implementation of CARB's portion of California Brown's -- Governor Brown's - sorry - California Sustainable Freight Action Plan, and other freight-related programs aimed at reducing emissions.

In her more than 16 years at CARB, Heather also served as Deputy Director in the Legislative Office, and began her career working on strategies to reduce statewide criteria pollutant admission -- emissions.

Thank you.

(Thereupon an overhead presentation was Presented as follows.)

MS. ARIAS: Thank you.

Thank you for having me here today. My name is Heather Arias, and I work at the California Air Resources Board. So Yana has given us a little bit on AB 617. Some of it also shows up in my slides, so I won't be duplicative and I will try and spend as much time for

questions than just going through the presentation. But we wanted to make sure that we gave you a little bit of details on where we're going. We are trying to get a lot accomplished in a very short amount of time.

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MS. ARIAS: So let's start with why. Why is AB 617 even here today?

Historically, my agency as well as other air quality agencies have looked at air quality, particularly criteria and toxics, more from a regional perspective. We have had a lot of improvement in that, as you think back look at our criteria and toxics impacts to the residents in this State, but there is still a huge disproportionate burden that remains.

And you can see on the slide here a recent graph that our Research Division provided that shows you the difference, the delta, between EJ communities in our state and non-EJ communities.

So we do have the data to show and prove that at a community level, there are the disproportionate impacts throughout California. Therefore, we need to readjust and we need to provide a community lens on how we are looking at criteria and toxics.

We also need to be thinking about the cumulative exposure. So in the past, as we've worked through all of

our different requirements, we may have put together state implementation plans for particulate matter, or state implementation plans for ozone, or the scoping plans for GHG. So it's very compartmentalized. More recently, obviously, we have been trying to look at it as a more holistic standpoint, because as you are very well aware, as you move to course correct in one area, you could inadvertently be causing problems in others.

So we need to be looking at not only the cumulative impacts of all the pollutants, but at a very granular level in the communities themselves. And we need to take advantage of all the advanced technologies that we're moving forward. And the biomonitoring is one example that we'd like to think about as we're moving forward and trying to figure out how we can show what it is within the communities from the direct public health indicators of how what we're doing and what is happening in the human big questions right now. And we don't have the answer. So hopefully you guys can help us.

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MS. ARIAS: AB 617 has a lot in the bill itself. There's a lot that it's asking. It's asking for emissions reporting, as Yana mentioned. There is best available retrofit control technologies for stationary sources. We are asked to put together a clearinghouse. There's

penalties. There's requirements for monitoring plans. There is the requirement for state strategy emission reductions plans. We need to identify communities. We need to do assessments of sources. The districts need to do assessments of their risk reduction audits. And then there is an opportunity for grants. And we're going to get into each one of these.

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MS. ARIAS: First and foremost is the communities. So this bill is all about the communities, and it's all about trying to hear from them and help them. And help them means immediate actions. It doesn't mean, as Yana stated, the concern of don't keep studying me, don't keep studying me. My family has dealt with this for generations.

And if you've had the opportunity, then you've heard these stories. You've been able to walk through their neighborhoods. If you haven't, I really encourage you to do so.

And prioritizing communities with the highest exposure burdens for two things. The bill is seeking deployment of community air monitoring and development of community emission reduction programs.

We are required to focus on disadvantaged communities and sensitive receptor locations. The

disadvantaged communities definition refers back to the definition that you are familiar with in CalEnviroScreen.

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MS. ARIAS: There we go.

Right now, we are working on trying to identify what we're calling year one communities. We are required at the staff level to provide a recommendation to our board in September of which communities - and I'll go back one slide just real fast - we're recommending for the deployment of community air monitoring, and the development of community emission reduction programs for year one.

Now, what we're doing to get information to help us formulate that recommendation is we have released a document that we're seeking input. We're seeking input from the air districts themselves, who will be required to actually implement those programs. We are seeking input directly from community members throughout their state, and we are also doing our own technical assessment.

So to try and help answer the question earlier in regards to what about communities that may not have a direct voice, we are doing technical assessments to try and make sure we identify all those communities. One of my colleagues, Vernon Hughes, is here in the room with me. His team is heading up that technical assessment, and we

talk a lot about, quite frankly, our own concern and fear that what if we miss a community, and somebody's out there that doesn't have a voice and they are suffering through this.

So that's something that we're constantly talking about, and are interested in data and other things that we -- that might help us along with reaching out to communities directly.

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MS. ARIAS: So the selection of communities, what is -- what are we doing in order to figure out who they are? There's possible data sources that we are using and we're asking the air districts themselves to use when they're putting together their recommendation. You can see them here on the screen.

The districts obviously may have their own data. So, for instance, you guys I'm sure are very familiar with the Bay Area's CARE Program and South Coast MATES Program. Some of the air districts, like Placer, for instance, also has a health risk assessment data that come from the rail line. And they -- the districts themselves may have data that they will also use.

And then, of course, there's different federal sources that we're also tapping into. All of these different data sources are feeding into the technical

assessment that Vernon's team is conducting, and that the local air districts are conducting as they're putting together their recommendations.

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MS. ARIAS: The bill, along with our requirement to bring to the Board recommendations for selection of communities also requires that we put together a statewide monitoring plan and a statewide strategy.

We are collectively calling that the Community Air Protection Program Framework. So right now, we're putting together one document that will meet both of the requirements you see on the screen in front of you. And in the monitoring plan, we are required to talk about current technologies, the existing systems throughout the State, and criteria for the monitoring programs that the districts will deploy.

For the statewide strategy, we're required to talk about various methods for assessing the exposure, and contributing sources to the communities. We need to identify strategies that we are going to implement to provide those immediate actions for reducing emissions. And we also need to establish a criteria the air districts will need to follow when they're putting together the emission reduction programs.

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MS. ARIAS: So in order to help that conversation, we released the draft concept paper. It is now last month, because we are in March now. We've been traveling a lot, and I'm really tired. But it is the next month. So last month, we released a concept paper, which is available on our website in both English and Spanish, and we are seeking input on some -- really our initial proposals on how we're going to move forward with all of things I just talked about.

Obviously, we're still in the very early stages of this program. We will tell you that we are the first to say that we're not going to get this right the first time around. We know that we're going to go to the Board. We're going to get the Board's input. We're going to put out the requirements of these programs. We're going to go through the first year, and we are going to learn a lot.

And the bill itself asks us to update this document once every five years, but it's highly unlikely we will wait that long, because we think we're going to learn a lot, as we're implementing.

However, we would like to be able to minimize how wrong we are, so we're working really hard to talk with communities all throughout the state, air districts throughout the state, lots of different government, academia, and others who will be involved in the process

moving forward.

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MS. ARIAS: The concept paper itself talks about how we might identify and select communities moving forward. That is an annual process. We will be required to go back to our Board every year for them to determine the next year's of committees -- or, I'm sorry, communities. We are talking about the strategies we will bring forward for reducing the exposure issues. And as I mentioned earlier, both the criteria for the emission reduction programs and the monitoring. There's a few other elements that we'll talk about as well.

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MS. ARIAS: For the strategies that we're considering, we are looking at what has the agency already committed to. We have most recently gone through a few planning processes. Our Board has adopted a statewide implementation plan with a lot of new measures. The Governor's Freight Action Plan was out that also commits us to many new measures.

The Board recently adopted the scoping plan. But all of those were done, as I mentioned earlier, with that regional or global focus. So now we're taking a step back and we're thinking about communities specifically throughout the state, and what can we do at the State

level to help those communities.

We are discussing things like which regulations should we be asking the Board to consider, providing us the guidance to go forth and start promulgating regs. We're looking at what sort of tools can we provide that will help the process moving forward, how can we leverage existing authorities and come up with new innovative strategies.

As Yana mentioned, land use is one of the more complicated ones that we're working hard on trying to figure out how we might be able to help make some progress there.

The community emission reduction programs are probably the most important to many of the communities themselves. They see these as real opportunities to get that reduction within their communities. So we're trying to figure out how and what are the elements to ensure those reductions, and make sure that they get progress quickly.

The bill itself requires that these programs have quantitative emission reduction targets. It requires that there are specific strategies that are deployed within the community. There's an implementation schedule for that, and an enforcement plan for that.

We are proposing that additional elements include

air quality goals that are reached, that there are metrics identified to help track progress, possibly tie in here with biomonitoring. One of the most important elements that we're proposing that we've been hearing from our community members is that they would like a community steering committee.

So we're proposing that both for the emission reduction programs, as well as the monitoring. And then, of course, public engagement plan. Those two last bullets are extremely critical to making sure that these programs work well, and that the community members have a voice. They have a seat at the table. They can inform this process, and they can feel ownership and feel like they have a say.

The bill requires that these programs go to the local air district board for approval. So the community steering committee doesn't have the final vote, if you will. However, we want to make sure that they have a lot of say in how it's developed.

Of course, they then have the opportunity to go to the air district board and make sure that if they have any concerns, those are expressed. Then the programs themselves come to my board. So after the local air district adopts the program, it has to come to the California Air Resources Board for adoption. So that is

another opportunity for any of the community members to voice any concerns, if they don't feel they were heard.

Last, which is a -- just a legal opportunity to make sure we highlight, there is also CEQA analyses that's required of these, because we are pushing for significant strategies. So through the CEQA process, the community members could also be heard, if they don't feel like they were.

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MS. ARIAS: The monitoring plans are another opportunity. This is one that we are struggling with a little bit, because not so much in what are the right components. As you can see on the screen, we're teeing up 13 different elements. One of my colleagues here, Walter Ham, is from the Monitoring Laboratory Division that can help answer questions.

Obviously, our staff is very well versed on how do you put together a monitoring plan, what are the questions you ask, how do you deploy that, and we're talking about that here. But really, it's how do we balance this need to be able to answer some of the questions that we have, but also not make the communities feel like, okay, you're just here studying me again, and you're not helping me. It's the same old thing.

So although there is a strong need, there is

definitely -- we need to make sure that these plans clearly articulate how they're going to get to action.

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MS. ARIAS: Community engagement I mentioned earlier. That is a corner stone of all of this. It is very important and key. We started this process last year with informational meetings at night. This is a picture of one of them throughout the state. We did have an informational meeting at our board. We've been partnering with the local air districts who were also doing community meetings at night throughout the State.

We just finished three informational summits throughout the State. And I think thus far, we've gone to and had approximately 60 plus meetings with various communities, business, academia, air districts, and others in this process. But we recognize that we still need to do a lot more to make sure that everyone has a voice in this process.

The community engagement that you see here are the requirements that we are considering of the local air districts when they're going through their process. We are suggesting that they form a community steering committee, that they have regional workshops, that they have community level informational meetings, that they ensure that those -- information is translated in the

appropriate language, they designate a contact, there's a website, and that they have specific board hearings.

So we are trying to recognize and implement what we've been hearing from the community members, that they need to have more opportunities to voice their concerns.

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MS. ARIAS: Other items that we're working on include resources for outreach, land use, and transportation. On this slide, it shows you what we are committing to do this year. Right now, because we're putting together the framework document, and we're trying to work on selecting the first year communities, really we are only going to have an opportunity to compile some existing resources.

After though this year, we hope to be able to develop some new tools, and look at some of the existing tools, see where we can go on land use, see what we can provide some help on.

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MS. ARIAS: In the air monitoring, we're also looking for opportunities to build on and deploy some newer technologies. As part of that, we are building an air monitoring resource center. It will have various tools and criteria for the plans, best practices, and most recent updates.

We are also working on a data display and communication portal that will take the data from all of the different air monitoring, from the emissions reporting, the air quality data that we have, and put it in one place that is hopefully accessible and understandable from all residents in the State. That's the objective. This is going to be a longer term thing as we're working with contractors to do this.

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MS. ARIAS: We touched briefly on the enhanced emissions reporting. Right now, some of the larger sources in our State do report to the local air districts. Depending on which rule we're looking at, it can be somewhere as every four years.

The bill does require that there be annual reporting now of many of these sources. So we are working with the local air districts to figure out what is the best way to move forward and meet this requirement. Our staff back at Sacramento are working on a reporting regulation that will most likely go to our board later this year.

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MS. ARIAS: The technology clearinghouse, we are working on another resource that will be online. The objective here is to be able to provide one place that a

community resident can go to. Eventually, the vision is that they could go to their street, they could click on a source, they could pull up a visual tool that will show them what controls are being deployed at that source. It can then show them how that compares to other sources within the State, what rules are applicable, and who has the regulatory authority associated with that particular source.

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MS. ARIAS: So we are working on incorporating the stationary components that exist now from the local air districts, the mobile, then area rules. But obviously, our long-term vision is going to take a little while.

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MS. ARIAS: Funding has also been a big key critical component of this. Last year, the legislation -- legislators gave $250 million for incentives for mobile sources with the majority of it going to Bay Area, San Joaquin, and South Coast, as you can see on the slide.

Those funds are being spent through our traditional Carl Moyer programs, and our Proposition 1B program. And those are to upgrade or replace existing diesel equipment.

As a side note, the Governor has actually

proposed another 250 million this year, but not just for mobile sources, also stationary. So we'll see how that moves forward.

Five million dollars was also provided for the community assistance grants, as Yana mentioned earlier. The solicitation is open for that now, and applications are being accepted until mid-April. And that's also available on our website both in English and Spanish.

Ongoing public engagement. As I mentioned, it's key. We'll just keep going, and we'll always say yes. We're very concerned that we're not going to able to really get to all of our community members. So it's great to be able to talk to folks like you who have also had those opportunities and hear your opinions.

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MS. ARIAS: Moving forward, as I mentioned, we already released our draft concepts. We just finished up our summits. The air districts are in the process of doing some community meetings now. We are providing our board and informational update later this month. That is on webcast, if you are interested. March 22nd is right now where we're planning on.

May we will be releasing the next version of that framework document I mentioned. In June, we will be doing workshops and community meetings throughout the State. So

if you have communities that you aren't sure if they're being heard, we would ask that you send them our way. And we'd love to talk to them, not only then but now.

And then in September, our board is going to consider our recommendations for the communities themselves as well as the planning documents.

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MR. ARIAS: Last, this is our website. So all that information I talked about, if you're interested in reading it, here is where it is, as well as a lot of other materials.

We also have an email in English and Spanish, so if you have and are aware of community members that we should be helping or talking to, please send them our way. We'd love to talk to them. And I don't know if we have any time --

CHAIRPERSON SCHWARZMAN: Yeah, we do.

MR. ARIAS: Okay.

CHAIRPERSON SCHWARZMAN: Thank you very much, Heather.

MR. ARIAS: Ten minutes for questions.

CHAIRPERSON SCHWARZMAN: Yeah, we have 10 minutes now for questions, starting with the Panel.

I have some, but I'll wait.

Okay. I'll start.

MS. ARIAS: Okay.

CHAIRPERSON SCHWARZMAN: One is you know we talk a lot about communities, but I have a question about what scale of community you're talking about, and I imagine there's a range. But, you know, there's the census tract level that's in CalEnviroScreen, or there's a specific neighborhood, you know, within a certain zone of a agricultural field, or a CAFO, or whatever, or there's communities organized around -- that aren't geographic, but there are organized around particular, you know, exposures or sources. So how are you thinking about that and working at the different scales?

MS. ARIAS: So I have a very unsatisfactory answer for you, and that we don't have an answer, and we're not planning on answering that. And the reason we're not planning on answering that is because we think that's best defined by the communities themselves. And so we have asked the air districts, when they're putting together their recommendations, and they're working with their communities to be able to define that for each of the recommendations they put forward.

We're also asking for the community members themselves to do that. We've learned very quickly, as we travel around, that everybody defines community very differently. And they -- we need to hear from the

communities themselves as to what they believe is that geographic boundary, and how is that defined.

So we are looking for those in the recommendations. And when we go to our Board and provide the recommendation, obviously at that point, we will have a geographic boundary, a description of the community, so on and so forth.

CHAIRPERSON SCHWARZMAN: I appreciate that sort of primacy for community self-identification. I wonder though, you know, you had -- you presented in your piece about how you're identifying communities. This piece of like CARB's own criteria, particularly addressing this issue like that Jenny raised about which communities are not necessarily self-identifying and coming forward.

MS. ARIAS: Right.

CHAIRPERSON SCHWARZMAN: And so that still feels like a relevant issue to me, not just to leave to people to come forward.

MS. ARIAS: Right.

CHAIRPERSON SCHWARZMAN: And so that was really my question is when you're looking at a community other than the way that they're defining it themselves, you know, in --

MS. ARIAS: Right.

CHAIRPERSON SCHWARZMAN: -- to try to find based

on the knowledge that already exists about who is disproportionately exposed, what scales are you thinking about?

MS. ARIAS: Yeah. So I think all the different data sources, as you mentioned, there are different scales for the different data sources as well, all the way down to the census tract, county, so on and so forth. So our objective with the technology assessments work is to make sure that we're not missing any of those hot areas, if you will.

We can't verify that, until we get in all of the recommendations from the communities, and the air districts, but what we are trying to do now is go through all that analyses and have that ready, so that once we get through that process there isn't anybody that we've seen through all the different analyses that we've been that's not showing up.

The other thing to keep in mind is these first-year communities, we would expect a number of them to be pretty small, as we're going through and starting and learning. So the fear of missing a community, we are very concerned about it. Looking for new data sources. Not so much that what if I don't have them for year one, but what if I get to two or three and somebody who has an extreme high level of cumulative exposure still hasn't

shown up on our list.

So we're always looking for new ways to find new data to help us with that, and to reach out to communities that may not be aware.

CHAIRPERSON SCHWARZMAN: One of the things I have in mind, if you don't mind --

MS. ARIAS: Yeah.

CHAIRPERSON SCHWARZMAN: -- is using the science that we have to think beyond geographic communities. You know, certainly you're aware of and trying to target, you know, sensitive receptors. And I just think about like the science that we know about how kids who have asthma, if they're from a low socioeconomic status, the implications of any given level of air pollution exposure are going to much more severe.

MS. ARIAS: Right.

CHAIRPERSON SCHWARZMAN: And so that's not a geographic community. It's kids with asthma who have a low socioeconomic status.

MS. ARIAS: Right.

CHAIRPERSON SCHWARZMAN: And those -- that's not necessarily like a well-defined community that's going to come to the process.

MS. ARIAS: Right.

CHAIRPERSON SCHWARZMAN: So anyway, I just wonder

maybe that's year two or year 3. But if that's -- has a -- if that -- if there's a way that that's working into the identification of communities.

MS. ARIAS: Yeah. No, that's a great question. And, yes, so the way we're thinking about that is because that is a -- that is a community that is more of a statewide community. So when we're thinking of the strategies that we need to bring to the table, we're thinking about strategies that we should be deploying that can help all communities statewide. So hopefully, the strategies that we are thinking about will help that definition of community, if you will.

For the emission reduction programs, it is a much more narrowed granular focus of a smaller geographic area. So we are trying to take both approaches, but that's a good point, and we should make that more clear. And when we are -- come out with the May version, if there are other ideas that you think we should be considering or even now from that statewide perspective, we'd love to hear it.

CHAIRPERSON SCHWARZMAN: Great. Other questions? Tom.

PANEL MEMBER McKONE: Kind of a couple questions. One is do you have a target? I mean, I know communities is a different issue, but do you have a target for how

many mobile source trackers and stationary source trackers you have that you can set up a resolution, like what level of resolution.

MS. ARIAS: Yeah, that's a -- no targets are set yet. The emission reduction programs for a particular community will have targets for them at a granular level. And we would expect that to be developed in conjunction with community members and others with that steering committee. So we're not looking at a target per se for each community, other than certainly we have a statewide target of eliminating that Delta that we showed you in that first screen, right, in order to make sure that all communities are on the same playing field. So that's our overarching target at this point.

PANEL MEMBER McKONE: Another sort of follow on the same topic. There's -- since about, I think, 2014, the Google street-view cars have been doing air quality monitoring.

MS. ARIAS: Right.

PANEL MEMBER McKONE: Is there any thought that you could work with them or is that a usable option?

MS. ARIAS: Yeah. Actually, we are working with them. And our Research Division has some contracts with them. In fact, we are often thinking about how else can we use some data, working with them to get more data. So

the short answer is, yes, we are working with them. If there are particular ideas that you think we should maybe even bring to the table in our work we'd love to hear it.

PANEL MEMBER McKONE: Just one quick thought --

MS. ARIAS: Sure.

PANEL MEMBER McKONE: -- is they record a lot more than air quality.

MS. ARIAS: Um-hmm.

PANEL MEMBER McKONE: There's a lot of visual information --

MS. ARIAS: Right.

PANEL MEMBER McKONE: -- that they pick up. I mean, like, you can see gas stations, you can see factories and everything --

MS. ARIAS: Yeah.

PANEL MEMBER McKONE: -- on the same street-view camera. So it might be an opportunity of not only looking at what it's measuring, but also doing attributable sources --

MS. ARIAS: Yeah.

PANEL MEMBER McKONE: -- so that you might do some enhancements -- modeling enhancements --

MS. ARIAS: Right.

PANEL MEMBER McKONE: -- once you have that kind of data.

MS. ARIAS: That's a good point. Thank you.

CHAIRPERSON SCHWARZMAN: José.

PANEL MEMBER SUÁREZ: Yeah. What's the funding? How much funding is there yearly for AB 617?

MS. ARIAS: Yeah. So the first year of funding, as I, mentioned the 255 million, the air districts also received 27 million. That was only one year of funding to help them start the program, and we at ARB also received $11 million of one year in funding. So there's not continuous funding for either us or the air districts, and the 255 was a one-year proposal as well.

In this year's proposal, the Governor has proposed, as I mentioned, another 255 million, and some funding to help us support moving forward.

PANEL MEMBER SUÁREZ: How much of that -- so there are a lot of different components to it. One, of course, monitoring, and then dissemination and implementation really is one of the biggest chunks, right? So how is that -- so what proportions of the budget are allocated for that roughly?

MS. ARIAS: Actually, the 27 -- or you're talking about the 27 million the air districts are using or are you referring to --

PANEL MEMBER SUÁREZ: From the -- yeah, from the yearly budget for --

MS. ARIAS: Okay. So the 27 million that the air districts received, most of that is being used just to start the initial implementation of getting this program moving forward.

The outreach getting ready for the emission reduction programs and the monitoring. Some of the bigger districts already have some monitoring funds that they will be putting forward to start the initial launch, if you will. But they are already in the process of trying to quantify, and that's something we ask of them to quantify what would be the resource needs for monitoring.

In our particular budget, we did receive some funding for staffing, as well as some of the contracts. Walter, did you want to speak to the contracts that we received funding for?

MR. HAM: Is this on?

Not on?

On. Okay. Hi. So I'm Walter Ham with CARB.

AGP VIDEO: Raise the mic.

MR. HAM: Oh, sorry. I should know that.

So we had number of contracts. We have one contract to fund a community based participatory research program in IVAN, Imperial, that's to continue community-based monitoring for another year, while also building materials for best practices and guidance that

can be shared with other communities.

We have a contract for a data portal. So as Heather mentioned, all of this information needs to get somewhere and be displayed, and to help share information statewide, so that those who don't know how to get to the data have better accesses and better transparency to it. So there is a contract for that as well.

We have a few smaller research contracts to develop some technologies. We have a contract to fund a black carbon sensor that can be used -- that's been used in West Oakland actually previously, but to advance the science there, and that --

PANEL MEMBER SUÁREZ: And that's under the grant program that you have --

MR. HAM: Oh, do you mean the --

PANEL MEMBER SUÁREZ: -- or is that separate?

MR. HAM: Which grant program?

PANEL MEMBER SUÁREZ: So there's a component for this actually grant -- providing grants to communities, and is it also for development of technologies, or is that separate?

MR. HAM: Right. So that's -- I think that's Veronica's program, and I think Heather would be better to speak to that.

MS. ARIAS: Yeah, I can -- I can talk to that.

So what Walter is talking about is the funding that we received, that ARB received, for implementation. What you're asking about is the $5 million for the community air grants. And that's the solicitation that's open now. And it is for the communities and nonprofit organizations to be able to apply. And, yes, monitoring is one of the applicable funding sources.

CHAIRPERSON SCHWARZMAN: Great. Thank you very much. We need to move on and I have a very quick question. Is all of the monitoring outdoor?

MS. ARIAS: Yes. Walter is nodding yes.

CHAIRPERSON SCHWARZMAN: Okay. Thank you. Thank you.

Okay. I'd -- thank you so much to both of you.

MS. ARIAS: Thank you.

CHAIRPERSON SCHWARZMAN: And we'll be coming back to you in the discussion session.

I want to introduce the next speaker, who is Victor De Jesús, who will present on the advances in biomonitoring methods for volatile organics. Victor is the Chief of the Volatile Organic Compounds Laboratory, Tobacco and Volatiles Branch at the CDC. His lab characterizes human exposure to harmful VOCs as part of CDC's National Biomonitoring Program.

Victor has published over 50 peer-reviewed

articles and coauthored three book chapters. His work has earned him two CDC/NCEH/ATSDR Honor Awards for Excellence in Public Health Practice. He holds a Ph.D. in analytical chemistry from the Georgia Institute of Technology.

Thank you.

(Thereupon an overhead presentation was presented as follows.)

DR. DE JESÚS: Thank you And go Jackets.

Good afternoon, everybody. It is my pleasure to be here with you. And thank you for the opportunity to share some of the work that we do at the VOC laboratory at the CDC, and how this work supports the nation's biomonitoring efforts.

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DR. DE JESÚS: So as a quick refresher, everybody here probably knows NHANES very well, for -- but for those of you who may not, NHANES is the National Health and Nutrition Examination Survey which is conducted by the National Center for Health Statistics, part of CDC.

This survey, it's very unique, and arguably the foremost biomonitoring effort in the world. And we follow approximately 10,000 individuals in two-year cycles. And some folks may consider this a bit intrusive, because we ask just about everything.

And this is done in an effort to truly understand

what the status of the nation's population is. And not just that, we also want to understand what is -- what are the different environmental exposures. And this is where our laboratories come in to support this effort. Over 150 analytes that are presented as part of the NHANES reports are analyzed within our Division of Laboratory Sciences. Our VOC laboratory provides support for approximately 120 of these analytes. And I'm going to share with you some of the methodology that we use to provide these invaluable data.

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DR. DE JESÚS: So our laboratory has the capability for five analytical methods, three of which I will discuss in the time that I'm here with you today. I'm going to start with the volatile organic compounds in blood assay, which currently includes 44 different analytes. And we use gas chromatography mass spectrometry to detect these compounds in blood.

The second assay that I'm going to discuss is the volatile organic compound metabolites in urine. Currently, we can detect about 30 different metabolites of parent VOCs. And I'll go into a list in a little bit. And we do this by liquid chromatography mass spectrometry.

The last method that I'm going to actively discuss today is a fairly new method that we developed to

look at analytes, metabolites of diisocyanate exposure. And this is somewhat the oddball, if you will, within the mission of the VOC laboratory, But I'll explain how this came to be, and how it really fits within our mission.

We have two other methods that I will not discuss today in the interest of time, but we -- but certainly, I can provide more information upon request. And one of them is aliphatic diamines. This includes some diisocyanates. And also by liquid -- performed by liquid chromatography mass spectrometry.

And we also looked at aldehydes in serum. This we actually performed for one NHANES cycle. And again, more information on that upon request. These assays are truly meant to be complementary. And the kind of picture we can provide to the National Center for Health Statistics, so that we can better explain what some of the VOC exposures are and may be -- will be in the future for the population.

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DR. DE JESÚS: So let me start by the seminal assay that came out of our laboratory, which is volatile organic compounds in blood. And here represent the reference for the method. As a side note, all of the methods that I'm going to be discussing with you today have been published, and are available in -- and I believe

I sent them all to Sara, so they're all online.

This assay -- well, the latest variation of it was published originally in 2006 and has been used -- has been presented in NHANES for approximately 12 years, 14 years now. So we have a lot of data where -- and we -- where we can really study what the population's exposures to VOCs has been.

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DR. DE JESÚS: So I'm going to bore the non-chemists in the crowd a little bit with some of the specifics of what we do. This assay, while it's perhaps one of the most simple assays that we have, really requires a lot of preparation. Namely, we are all used -- if you have ever given blood, you are used to seeing Vacutainers with EDTA, or heparin, or some other stuff. Our Vacutainers are especially cleaned in our laboratory for a period of three months to ensure that they are truly VOC free.

So the compounds -- the concentrations that we report, they are very, very accurate. And this is certainly a point of pride for our laboratory. We spend the time and the effort in cleaning the Vacutainers, removing -- of course, it's not completely VOC free, but it's pretty dang low. And we also coat them with the anticoagulant. So we are the only unit actually handling

these Vacutainers.

We ship these Vacutainers to the mobile examination units that NHANES uses, and then they come right back to us. From that blood sample, we then take a three milliliter aliquot, which we then introduce an internal standard. And our internal standard contains stable isotope labeled compounds for every single analyte that we test. So we are truly doing perhaps the most -- exacting, the most accurate determination of these concentrations in blood.

This assay has about a runtime of about 30 minutes or so. We are fortunate to have enough equipment to be able to process approximately 2,000 samples a year in our laboratory without any significant backlog of samples, as they come in. So they're analyzed fairly quickly. That way we can preserve the integrity of the samples.

This assay has been in existence, as I mentioned earlier, for well over 12 years. And it offers a lot of advantages. This assay really looks at acute exposure. In other words, if those participants that come into the examination unit and give blood, we can tell their exposure perhaps in the past 30 minutes to one-hour, before they walk through the door.

The examination centers are actually very low in

VOCs. We work with NCEH to ensure that there are no confounding exposures while people are there. And if there are, we could actually tell, but that's a story for another day.

(Laughter.)

DR. DE JESÚS: So this method is really, really useful to the determine in the short-term, or, you know, exposures that have occurred very -- just preceding a person's visit. So that's very unique. Now, on the flip side to that, we cannot really tell whether a particular result has been the result of a chronic exposure. And I'm going to get to that in a minute. But I just want to show you what, as a chemist, really gets me going.

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DR. DE JESÚS: And that's just a typical output from our analysis. Every single peak on that slide represents one compound that we can analyze with this method. And we are -- again, by using stable isotope labeled internal standards, the results are very accurate. And we've got years of experience with this method that really helps us analyze the data, and provide scientific insight into what a particular exposure may have been.

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DR. DE JESÚS: Now, as I mentioned, this really is good -- this method that is very good for looking at

short-term exposures prior to entering the examination centers.

So we quickly realized, well, you know, we don't really know. We cannot really tell if somebody has been exposed to something the day before, or maybe two days ago. So this is how the VOC metabolites method came to be.

We looked at the literature, and we identified some compounds, some metabolites that actually show up in urine, and could be very useful in determining, you know, longer term exposure or exposure that may have occurred perhaps a day before the actual examination.

So right now, we worked on this assay, and this was published back in 2012 - so it's a fairly recent assay - where we can analyze 30 different metabolites for 20 parent VOCs.

Now, a lot of these VOCs, a lot of the original input to do this was, of course, to look at VOCs resulting from combustion products namely tobacco smoke. Our branch is the Tobacco and Volatiles Branch. So as you might expect, we do examine tobacco exposures quite a bit.

That being said, the assay is actually very elegant, in that we can look at all kinds of volatile organic compounds, not just those from cigarette smoke.

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DR. DE JESÚS: So very briefly, our assay only requires about 50 microliters of urine. So it's a very easy -- there are no significant sample preparation requirements, unlike what I just described for the blood.

So any collection cup will do. We essentially examine people whether they've been smoking all kinds of combustible products or whether they have been in occupational environments, that they may have been exposed, et cetera. And we just collect their urine and analyze it. So it's very, very simple, what we call in the lab dilute and shoot. Take a little bit of urine, dilute it, add the internal standard, and voilà, you get urinalysis. Folks it really is that simple. So that's what's so unique about this assay.

And we have been able to adjust the assay, so that it is extremely high throughput. We have four instruments, and we can analyze thousands of specimens in a year. And I'm going to get into that later on. But I just want to emphasize the simplicity of the assay, and certainly an assay that could be adapted by any laboratory with a mass -- with a UPLC and mass spec system.

So wink, wink.

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DR. DE JESÚS: Here we go. So since I like looking at chromatograms, here's another sample

chromatogram for this assay. And every peak corresponds to one particular metabolite. A lot of these metabolites are mercapturic acids. Some of them are not. We've been able to leverage the chemistry of mercapturic acids to try to capture as many of these metabolites as we possibly can.

Right now, as I mentioned, we're looking at 20 parent VOCs. We are getting ready to add three more into the suite with the same assay. So we're very excited about that. This is definitely not a static assay. And it offers truly complementary information to the blood VOCs assay.

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DR. DE JESÚS: The third assay that I'd like to discuss is the aromatic diamines in urine. And this is what I referred to earlier as the diisocyanate exposure metabolites. Diisocyanates are products that are present in polyurethane foams. The metabolite chemistry is very interesting. And this is -- it's sort of a fortuitous cascade of events. Our previous laboratory chief had an interest in some amine compounds. And as we started looking more at the literature, we also found some reports of babies in NICU units that had been exposed to some of these compounds.

So we're like, whoa, this is really cool, and

I'll bet we can do this. So we have a fantastic chemist who spent a significant amount of time developing this assay to look at these metabolites. And right now, these assays -- there's one of them actually that's found in hair dye. So those folks that dye their hair black, for example, get a significant exposure to one of these compounds. So there's actually a few literature reports out there.

So we really wanted to look at this. And while technically not a VOC in the classical sense of the word, meaning not really volatile, these are compounds that, given their chemistry, present very unique opportunity to study particular exposures from either consumer products, or furniture, or some other environments. So this was sort of a long way around to say our laboratory certainly has the capability of looking at different types of exposures in biological matrices.

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DR. DE JESÚS: So this one is almost just as simple. The sample requirement again is very low. We only use 250 microliters of urine this time, but the sample prep is significant. We have to acidify, and then treat with ammonia, and all these kinds of things. So it's kind of a time-consuming and labor-intensive assay.

We added these analytes on to the NHANES suite.

And I'll get to that in a minute. We continue to perform the assay, and we are learning a lot about the population's exposure to these diisocyanate compounds. And it's quite interesting.

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DR. DE JESÚS: So this is the least interesting chromatogram, seeing that we are only looking at five analytes even. Sixty day. These are toluene diisoamines, which are the metabolites of toluene diisocyanates. And PPDA is paraphenylenediamine. That's the biomarker -- that's the metabolite of the product found in black hair dye. So, yeah, this was actually a very interesting assay that we developed.

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DR. DE JESÚS: Further evidence of the capability of the laboratory to be able to assist different types of biomonitoring investigations. So these three assays are currently active and in use, and we are providing data to NHANES to look at the population levels of these biomarkers of exposure.

However, we are continually looking at ways to improve not just the data that we provide, but, you know, the opportunity to look at different compounds, different metabolites that may help paint a clearer picture of what the population's exposure truly is to some of these

compounds.

And one compound in particular we're paying a lot of attention to is benzene. Benzene, of course, everybody is familiar with it, carcinogen. Ubiquitous. And benzene also gets metabolized upon exposure. So we're focusing our efforts for the VOC metabolites assay into two metabolites that have been reported in the literature, muconic acid and phenylmercapturic acid.

So these compounds, we are developing a separate assay to really drill down on a person's exposure to benzene, because the current assay does not really work for muconic acid. The chemistry is just a little different. And for a phenylmercapturic acid, our colleagues in Canada are actively measuring their population's exposure to benzene using phenylmercapturic acid. And we have -- we're trying to learn from them how they're doing, because they seem to be doing it just right.

So there's certainly a lot of room for improvement in some of the activities that we undertake, and we certainly want to collaborate with other laboratories, so that we can do a better job of characterizing the exposure.

In addition to that, we are looking, as I mentioned earlier, to a few new metabolites. And I want

to share those with you. The parent -- the first parent compound is methylpyrrolidone which is, of course, found in paint and coating removal products.

Furfural and 5-hydroxymethylfurfural which are compounds that are found in e-cigarette vapor. So these compounds are also metabolites. Well, their metabolites can also be found in urine. So the next version of our VOC metabolites assay is going to include these metabolites, so that we can really start painting a picture of what vaping activities actually entail, because most people think, well, you're not actively burning something, therefore the exposure to combustion products does not exist. And while there is some truth to that, does not necessarily mean that it's a safe exposure, but -- and I'm going to leave it right there, because then I'll get into trouble.

(Laughter.)

DR. DE JESÚS: And one other class of compounds that we have a keen interest is, is terpenes. As you know, any -- in many places that you walk into, people are employing plug-ins, fragrances, Lysol, all of these kinds of products. They can contain a lot of terpenes.

Also, burning different natural products produces terpenes. And there's very little information about the population's exposure to these kinds of compounds. So for

the NHANES 19 -- 2019 to 2020 cycle, we're going to start looking at some of these terpenes. And it is my hope that we can also adapt some of it. We're looking at it to see how it gets metabolized in vivo. And hopefully, we can identify a metabolite that we can follow using our assay, so that we can get a more complete picture -- and I just spilled water here. Sorry -- from exposure to these compounds.

We also need to find out how they behave upon combustion. So I'm hoping our laboratory can perform some of those studies as well.

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DR. DE JESÚS: So I hope I have convinced you that we're doing really cool stuff in the VOC laboratory. And I want to share with you some of the successes we had in this last fiscal year.

We were able to report over 600,000 analyte results for the population. We are involved with NHANES as I mentioned. And some of you may know the Population Assessment of Tobacco and Health Study that FDA and the National Institute for Drug Abuse are performing together. As you know, FDA received regulatory authority to issue regulations on tobacco products. And part of that mission involves, well, generating the numbers that are needed to promulgate regulations.

Our laboratory provides a lot of that data. And for us specifically, that means over 11,000 samples a year from a different cohort of people, for which we provide data on VOC metabolites. So our laboratory keeps a little busy, because we -- we look over 20,000 samples a year. And we are very fortunate that we have the ability to perform high throughput testing. Frankly, it's the only way we could do it. Otherwise, we would be drowning in blood and urine, and that just does not sound fun.

(Laughter.)

DR. DE JESÚS: So not only can we do this for low levels of metabolites in VOCs, we also get involved in occupational and other environmental studies. And here, I have some examples on this slide. I would like to highlight the Gulf Coast residents study that we performed, because something really cool came out of that.

You all may remember the Deepwater Horizon incident that happened in the Gulf of Mexico a few years back. And a lot of the Gulf residents complained of exposures to the petroleum that was washing up. Our laboratory was able to analyze some of those specimens, and issue the results, which unfortunately I cannot really go into a lot of detail about.

But suffice it to say, that it gave us a perfect, perfect, perfect set of numbers, so that we could build an

artificial neural network, a statistical approach, where we could essentially create a profile or a signature, if you will, of petroleum product exposure.

We were able to successfully apply that concept to NHANES. And we identified indeed a few participants that, after we looked at the questionnaire from NHANES, we were able to unequivocally determine that, yes, they had indeed been exposed to petroleum. Now, part of NHANES, our laboratory does not have access to a lot of those questions. The answers to the questions, it's all basically anonymous. All of these samples get de-identified, so we were petty stoked about it. We published that method, and I think I sent that to you also, Sara.

MS. HOOVER: Yes.

DR. DE JESÚS: So read the paper. It's actually really cool. So unique data sets do enable us to provide significant intellectual input into the characterization of exposures. And we also help out some laboratories around the world. And specifically, we helped out these folks in Sweden, where they were -- they had a cohort of people working in a factory where diisocyanates were prevalent.

And indeed, these urine samples lit up like a Christmas tree once we analyzed with our assay, and we

were able to provide some input into the remediation steps that they took. So this was a very successful collaboration.

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DR. DE JESÚS: So, in summary, I hope I've been able to convince you that the methods that we have developed and used in biomonitoring in general really provides good information about the population's exposure to VOCs, as well as other compounds. We are always looking for ways to improve how we do what we do. In meetings like this, and other scientific meetings where we have the opportunity to chat with our colleagues are always welcome. And hopefully, out of these meetings, we can find ways to develop methods that suit a particular program's needs.

So all that to say that our laboratory is certainly open to collaboration. We are certainly open to supporting efforts for laboratories to bring up some of these assays and provide expertise as needed, and as requested, of course. We're not just going to show up and tell you what to do.

So anyway.

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DR. DE JESÚS: These are the folks that do the real job. I just get to stand up here and talk about

them. And I consider myself incredibly fortunate to lead a group of 22 bright and motivated scientists that make all this work possible. And, of course, my boss, Dr. Ben Blount, who many of you know. And funding, of course, from CDC and the FDA Center for Tobacco Products.

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DR. DE JESÚS: So if you take anything home after this presentation take this, biomonitoring does provide useful information about exposure to VOCs.

Thank you very much.

(Applause.)

CHAIRPERSON SCHWARZMAN: We have some time -- I'm sorry. We have some time for questions, and then we'll be moving into a larger discussion about all of the three talks. Lots of question. I saw Oliver's hand first.

PANEL MEMBER FIEHN: So thank you for your fascinating presentation. There are many, many exposure studies in the United States from many, many laboratories. I'm wondering how to keep quality controls across those laboratories for -- you know, some of them we are involved or we are tangentially involved, or we heard about. What's the process if somebody would like to see input expertise in quality control or even implementing certain protocols?

DR. DE JESÚS: Right. That's a great question.

Let me try to describe some of the current efforts that are available to anybody right now on that particular subject. For blood VOCs, to our knowledge, there is no other laboratory performing that assay. So such a program does not exist, except what is offered by the LRN-C Program, which is the chemical terrorism.

MS. DORTCH: It's Laboratory Response Network for Chemicals.

DR. DE JESÚS: What Kristen said.

So Laboratory Response Network. So this is different public health laboratories and some others too that are able to respond in cases of emergency or, you know, an event. We actually participated in that proficiency testing program. But the levels that are provided are such that we have to dilute our -- those samples, you know, thousands of times -- a thousand-fold times to be able to be within QC. So that's our -- really our only measure -- external measure of quality.

Of course, we have a very thorough QC program inside CDC. We are a CLIA certified laboratory. And we go five steps above and beyond the requirements of CLIA. So for that particular assay, just give us a call and we'll be happy to talk one-on-one.

For VOC metabolites, there's actually an external quality assurance program out of Germany in laboratories

that perform VOC metabolite testing. And there are a few. Minnesota comes to mind for example. They participate in this. The LRN-C does not have a PT program for that.

Our performance is within the mark. So we're not above/below the means. The main differences between different methods is the way that the urine gets treated. You know, we don't essentially treat it. We dilute it. That presents some issues sometimes to some other laboratories. They clean up the samples even more. So I really can't answer a universal way to ensure quality. I can assure you though that at least within the CDC laboratories, our QA requirements are so strict that we are very confident about data that we produce. And 9 times out of 10, our results compare very favorably to what other researchers put out.

So that's a long way to go around answering your question. But I compare that to, for example, numerous screening programs where there is one provider that everybody compares themselves against that does not really exist yet with some of these assays. So does that answer your question?

PANEL MEMBER FIEHN: Yeah.

(Laughter.)

CHAIRPERSON SCHWARZMAN: Carl.

PANEL MEMBER CRANOR: Thank you.

Two questions. I guess maybe this is the easier one. When people think about occupations --

MS. HOOVER: Carl, mic.

PANEL MEMBER CRANOR: Pardon?

Oh. For occupational exposures, it seems as if that's one of the most poorly protected subpopulations in the country. Are you seeing that in your occupational biomonitoring?

DR. DE JESÚS: Well, we don't perform occupational biomonitoring.

PANEL MEMBER CRANOR: You don't. Oh.

DR. DE JESÚS: We do not.

PANEL MEMBER CRANOR: I thought this was on the list.

DR. DE JESÚS: We perform the assay on some selected occupational sets of folks, specifically through NIOSH. We work with NIOSH. They have -- they respond to different activities. We perform the analytical capability. In those instances, we do not provide any interpretation of the results.

What I can share with you though is --

PANEL MEMBER CRANOR: You don't have a population average versus occupational average?

DR. DE JESÚS: All we -- right, well, we have the population average, and that's the data from NHANES. And

we do provide that, and say this is the non-institutionalized U.S. population presumed non-occupationally exposed. And that's about the extent of the input we can provide. It's up to the NIOSH investigators then to take it further.

What I can tell you though is that in many of these studies, yes indeed, we do see very elevated levels of some of -- of whatever the compound of interest is.

The last one that we did was for carbon disulfide for example. And this is one metabolite that if you look at the NHANES data sets, population levels are very, very low and the samples that we examine indeed exhibited very high levels of that particular metabolite. So it is responsive. But since those are occupational exposures, our laboratory does not --

PANEL MEMBER CRANOR: I see. Okay.

DR. DE JESÚS: That's not our lane.

PANEL MEMBER CRANOR: Okay. Second question. Can you talk about some of the substances in the Deepwater Horizon profile that you did and -- or not?

DR. DE JESÚS: Well, I can talk about the -- perhaps the most common ones, the BTEX compounds, you know, benzene, toluene, styrenes. Those are ubiquitous compounds. But our study actually examined -- reported levels of these compounds from different petroleum

sources, if you will.

And it's very, very difficult to tell apart -- to tell an exposure like that from just regular outside air breathing, because our method is so sensitive to those compounds. And notice I'm trying to dance around that.

(Laughter.)

DR. DE JESÚS: So the BTEX compounds, we were -- the profiles were very unique across different types of petroleum products. And that's what I think was perhaps the most unique finding of that particular study. So -- and that's unfortunately about all I can say on that particular set of samples.

CHAIRPERSON SCHWARZMAN: Yeah. Jenny, please.

PANEL MEMBER QUINTANA: Hi. Relative to our previous two speakers, have you been participating in studies that look at either traffic exposure or polluted areas versus less polluted areas in relation to the VOCs?

DR. DE JESÚS: No, we have not.

PANEL MEMBER QUINTANA: And what about endogenous sources? Have you looked endogenous versus exogenous --

DR. DE JESÚS: Indirectly --

PANEL MEMBER QUINTANA: -- which imagine there's going to be some.

DR. DE JESÚS: Indirectly, we do. Our laboratory's Congressionally-appropriated funding however

only provides for us to look at NHANES samples, if you will, at just regular population monitoring. So we are somewhat limited in our ability to participate in toxicological studies, if you will. Most of our NIH collaborators, in collaboration with some universities, actually perform that. So we are sort of on the periphery of that.

I can tell you that within the past five years or so, we have not been involved in such a study, and something that specifically involves outside air, because many times that's sort of seen as the EPA's purview. And, you know, as a fellow federal agency, we have to be extremely mindful of the intent of our Congressionally-appropriated funds to perform activities. So not to say that we cannot do it, but traditionally we have not.

PANEL MEMBER QUINTANA: But just to follow up, in NHANES itself, do they collect traffic density at the address or anything? Because like, I mean, someone could potentially --

DR. DE JESÚS: Right.

PANEL MEMBER QUINTANA: -- look at this issue in your data.

DR. DE JESÚS: So NHANES, of course, they decide the locations they're going to do the sampling. To my

knowledge, they do not perform any like criteria air pollutant sampling, is that right, Kristen?

MS. HOOVER: Come to mic?

DR. DE JESÚS: While she gets here, NHANES -- a lot of the data that NHANES actually collects, we are not privy to. So it's a dance we dance within CHS.

MS. DORTCH: Kristin Dortch with CDC. I'm the Project Officer for the State Biomonitoring Cooperative Agreement Grant.

But one of our -- or another program that we have is the Environmental Health Tracking Program. And so with that program they get data from ambient -- or air sources and different things like that. And I was even going to mention that with the other program, with the grant-funded program is that the Environmental -- Environmental Health Tracking Program has a portal for data to put all of that type of air exposure, water exposure type data versus biomonitoring, which comes from the NHANES program.

So we have other programs within CDC that look at environmental exposures and tracks that data.

CHAIRPERSON SCHWARZMAN: I have a question that came in online, specifically for you, from Mark Spence. He says on slide 15 of your slides, you state that the VOCL reported results are for 10,000 NHANES specimens for several analyses. How can a member of the public --

members of the public access these results or at least a summary of them?

DR. DE JESÚS: So all of these results are published on the NHANES website. I can tell you that last year that number was the number of reported analytes. And this -- those analytes included data sets going back to 2011/2012.

So right now for VOC metabolites, the latest published cycle was 2013/2014. We have reported 2015/2016, but that is in active review. And the process that we follow, we report the data to NCHS. They conduct their internal QC. Then they apply the creatinine corrections and the different weights. And then all of that -- those data come back to us for a final review. And then it gets published.

All that to say, so from the moment our laboratory says here's the complete data set to the moment where those data are public may take two to three months. So by the end of the year -- actually, I expect it to be in the next couple of months, all of the data from all the sets that we reported last year will be public.

And I guess I don't have the website for NHANES with me. Just Google NHANES, and you'll get to the home -- to the home page. And all of the data are divided by cycle. So you just go to whichever cycle you have, you

find volatile organic compound metabolites, and you can download an Excel file essentially, as well as all of the descriptors for the different variables, as well as all the different analyte codes and whatnot. So all of that is available to anybody who goes to the NHANES website.

CHAIRPERSON SCHWARZMAN: Thank you. So we're going to move into our group discussion, and I'm going to open that with a comment period. And I have a few public comments here. So, first, Tom Jacob.

MR. JACOB: Thank you. Tom Jacob, here on behalf of the Chemical Industry Council of California.

I have a general comment about the 617 program, and then a specific question for Heather. I'll just say I've been very encouraged in looking over the concept paper with the approach that's being taken there. I think it's fair to say that industry has been very uneasy about this law. It promises change to rules that are already among the most stringent faced by any industry around the globe.

We've been trying to sensitize our members to the dynamics of the EJ challenges that we face, and the steps that the State is taking to face those. Our view is that industry is part of the solution to this problem to the these challenges. In fact, the chemical industry for several decades has had a community awareness program in

their Responsible Care Initiative specifically aimed at trying to encourage our facilities to become closer to their communities, and to integrate the concerns of those communities into their own planning. This is certainly going to spur that.

My sense, by the way, having taken a closer look at the Sustainable Freight Program, is that we're in good hands because of the fact that 617 pirated Heather away from that.

I have a personal interest in land-use planning. That's part of my checkered history. And I had a conversation with Yana about a conspicuous absence of local governments from these conversations around environmental justice, around SB -- AB 617. I believe it's conspicuous because of the role of land-use planning in establishing the conditions out of which many of our environmental justice programs have arisen.

And my question for Heather is simply to note that the local governments are identified in that document, and land use is specifically going to be looked at. Do you have a sense, at this point, as to how they may have fit into the picture?

MS. ARIAS: Yeah, that's a good question. As we move forward with the communities and the air districts in implementing the whole program, not just the emission

reduction programs, local city planners, counties will be critical in all aspects of that. So we are interested in trying to figure out the best ways to engage them. We are working with the air districts, reaching out to them now. As we're putting together the requirements for the emission reduction programs and the monitoring, we have identified them as key members to the steering committees that would help implement the programs.

And we are seeking advice on the best way to include them, and to help them be able to have the resources necessary to make a difference as we figure out how to reduce the exposure in criteria in these areas.

CHAIRPERSON SCHWARZMAN: Sara.

MS. HOOVER: Okay. I just want to make one clarification about this discussion period. The focus of this discussion period is the intersection between Biomonitoring California, 617, VOC biomonitoring. So we really -- we're not actually having a big discussion about 617 specifically in those provisions, but we really want to focus on some of our informal discussion questions that we've posed to our Chair.

You know, what are some of the possible ways in the near term that Biomonitoring California could support CARB's efforts under 617, what are some of the highest priority air pollutant issues that are already known to

communicate -- communities across the state? That's what we were just touching on with Yana. What are some of the possible ways in the longer term that Biomonitoring California could engage with and support efforts to address these exposures by CARB, local agencies, and community groups?

So we really want to keep -- there's many, many workshops on 617, but we want to really keep this focused on how can we work together.

CHAIRPERSON SCHWARZMAN: Thank you.

And with that in mind, I have another request to speak from Kathleen Attfield, CDPH.

DR. ATTFIELD: I'm afraid my comment is a bit off that requested topic. My question was for Victor. And another hat I wear at the Exposure Assessment Section is I do a lot of work on e-cigarettes. So I -- as many people may know or may not know, there are thousands of flavoring chemicals in e-liquids an e-cigarettes. We are, ourselves, doing some toxicity testing on 40 with NIOSH.

But I was wondering how fufural got chosen, and if, you know, had a wider slate that you were wanting to prioritize for other method development?

Thank you.

DR. DE JESÚS: So furfural was chosen because of a couple of publications I came across late last year.

And those were focused on trying to identify some of the components in these flavored e-liquids, which is a personal area of interest.

And furfural, back from my days in graduate school, I remember being a particular challenge analytically. So I just started looking in consultation with my team lead, who leads the day-to-day operation for this assay, and lo and behold, some of the metabolites that have been reported in the literature, specifically in rat models, were mercapturic acids.

So this was very fortuitous in how it happened. So this wasn't -- this was just a very quick initial look into some different compounds. Also, furfural and the other one the, n-methylpyrrolidone, some request for review came through from EPA for some paperwork for some tox profiles that we're working on. So we quickly decided that these were compounds of interest.

And we then examined the literature, and we found them to be present -- reported to be present in tobacco smoke as well.

So that was the lens through which we chose these compounds to start with. That is certainly not a terminal list so if there are any other compounds that your program or yourself consider to be of importance lets' chat, so...

(Laughter.)

CHAIRPERSON SCHWARZMAN: Okay. Thanks very much. I want to return us to the topic for the afternoon's discussion that takes advantage of our three guests here. And as Sara Hoover just mentioned, what Biomonitoring California is really particularly interested in exploring is how biomonitoring can support the goals under 617. And some of those might be short-term projects like using data that the studies are already generating like CARE -- within CARE or in the Diesel Exhaust Study to help identify communities of high priority, or longer term like designing a targeted intervention study for a -- you know, once there are exposure reduction plans implemented, then it's an interesting set up potentially for a before and after study. And then the third piece that I think Sara just mentioned is attendance and Panel ideas about priorities for air pollutants to study or take action on.

So with those to sort of seed the discussion, I want to see if the Panel members have any comments on those topics.

Jenny, looks like she's ready. Yeah? Please.

PANEL MEMBER QUINTANA: Hi. Thank you, all three of you, for interesting presentations.

So I guess my question to you is maybe how you've already thought -- it sounds like you've already thought a bit how Biomonitoring California might interact with our

programs. I'd like to hear something about that. And I also would like to hear you comment on kind of the scale where you see the Biomonitoring Program interacting -- and just as an example, I think, as you said very obvious on helpful use of biomonitoring is to show the impact of policies, you know, clean diesel, reduces, you know, this carcinogen in people's urine. You know, 1-nitropyrene metabolites. Very powerful example of policy being effective.

But also it could be that CalEnviroScreen, and air pollution control districts, and CARB use models, you know, of diesel. And would it be of interest to kind of validate the models that are used by looking at the absorbed doses.

My last part of my question - sorry this is going so long - is to also ask you about large-scale applications like model validation, as well as getting down to a question you asked about indoor exposures. So are you interested in communities in drilling down to disparities that housing might cause in exposure to external air pollution? Like, there's a huge amount of scale from local, to large scale, to between individuals' differences, and have you any comments on that, I guess?

CALEPA ASSISTANT SECRETARY GARCIA: I can start since I think my responses might be a little broader than

Heather's. So in terms of thinking about how Biomonitoring California and some of the data that we're already gathering can inform AB 617, I had few ideas. I mean, I think in the short term, the information that we have from West Oakland and from the CARE Study I think would be really critical in prioritizing communities.

And since the -- since shortly after this came into law, I think communities were concerned that there would be a delay in action, that, you know, continued studies, additional monitoring would only delay the need for reductions immediately.

So I heard a lot of interest in kind of pushing for communities to be eligible for reductions immediately, notwithstanding the monitoring piece of the legislation. And so in that vain, I think if we look at the data points that we already have, that would be really important to inform where we prioritize our efforts for immediate community reductions for the eligibility criteria for those selected communities and the first sort of tranche that we're looking at in this first year.

In terms of scale, I think from a timeliness perspective, my understanding of the timeframe for getting a sort of statewide baseline is that it's pretty long. And I think for our purposes in AB 617, maybe looking at a more granular scale. As Heather mentioned, we're still

thinking about how we're defining communities for the purpose of AB 617. But if we're looking at sort of block-by-block radius, much smaller than even the census tract around a particular facility or around a high concentration of facilities, or, you know, CAFO, as Dr. Schwarzman mentioned, I think we can look at the biomonitoring criteria there, a lot more granular, not necessarily waiting for that statewide baseline data, but looking at community baseline data.

And then for model validation on diesel, I'll let Heather take a stab at that, since she's quite a diesel expert herself. Thanks.

MS. ARIAS: Actually, I'll defer to Vernon on the model.

(Laughter.)

MS. ARIAS: So while he's walking up to the mic -- there's your cue, Vernon --

(Laughter.)

MS. ARIAS: I will talk a little bit about the -- we have been talking about biomonitoring, how maybe it might fit into this larger program. One, of course, we are scientists. We love data. The more data we can get, the happier we are.

That being said, we don't want it to slow down any of the emission reduction programs. It's hard for us

to say specifically how it would fit. But one of the things that I think would be good for us all to collectively be thinking about is how might biomonitoring be used as a potential metric for tracking progress of any one of the programs that we move forward with.

I don't know about timing opportunities, and how we can work together to try and fold that in. But certainly as we move towards September and identifying the communities, once those communities are identified, we'll understand what the problem is at that point, and which communities we're thinking about.

That's probably a good time for us to be circling back and saying, okay, here's where we're at. This is the communities that have been identified, and the scope.

As those communities are working with the air districts and us to think about what their program is, they're going to be talking about metrics. And that's a good opportunity to be thinking about where and how can biomonitoring be put into the program, specifically in the community scale level.

As far as the modeling is concerned, I'll let my colleague Vernon Hughes answer.

CALEPA ASSISTANT SECRETARY GARCIA: Can I actually add really, really quick before we move on? Sorry.

MS. ARIAS: No.

CALEPA ASSISTANT SECRETARY GARCIA: Just very quickly, the other thing that I think would be helpful from the community grants perspective, on the community level, I think one of the things that communities will be looking for are sources of data as well that they -- that they can use.

So to the extent that we have accessible information about what biomonitoring is, what it can do, and I think we have those sorts of fact sheets and materials that we use to approach communities when we're going to engage in a biomonitoring project, those would be extremely helpful, building partnerships with community based organizations, where we've had biomonitoring projects in the past would be really good as well.

The Community Grants Program again will rely very heavily on those sorts of partnerships on that kind of collaboration. So that over time will also be helpful.

MS. HUGHES: Okay. Well, thank you. Vernon Hughes, Chief of the Community Assessment Branch in the Office of Community Air Protection. Heather and I are both branch chiefs in that program.

So in terms -- I would echo everything that Yana and Heather just mentioned.

Part of the challenge I guess would be to looking

at the objectives of a particular community and what they're -- they've identified a problem, the objectives of the Community Emission Reduction Program, and how biomonitoring can mesh with those specific objectives. I think we're going to find, again as Heather said, as we start this program, we're going to learn quite a bit as we move forward. We're going to have a few communities selected in this first year. We'll learn from those. And moving forward, how do we improve this program?

So to some extent, given a profile of a certain problem, how can biomonitoring fit in, so developing standards, methods to meet certain needs or objectives of a particular community would be useful. As to the models, currently, and again going to some of Heather slides, our programs have been focused on regional air pollution, these tools that we have, our emissions inventory, air quality modeling, the models that we use are primarily focused at the regional scale.

They're also focused on data that are fixed locations. And so the challenge with biomonitoring is you have a moving human that's exposed to different things inside and outside of a community. Again, I think this goes to the protocols of what's the objective in a particular community, and how can biomonitoring be used. Certainly on a longitudinal basis, and maybe given the

scale of long-term reductions, and say diesel or gasoline exposure, biomonitoring is definitely a tool. But getting down to the local scale, we're struggling with this ourselves. Collecting data at the local scale for our models, again both emissions inventory and air quality modeling, that is one of the challenges that we face, and that we're going to be working through.

So I hope that helps to some extent address your question.

CHAIRPERSON SCHWARZMAN: Please.

DR. DE JESÚS: I'd like to provide an example that speaks Specifically to your question about biomonitoring actions that can track the results of policy changes. We are getting ready to publish a study that we performed looking at levels of methyl tert-butyl ether in the U.S. population. And, of course, that used to be an additive into gasoline, which was effectively banned in 2006.

And data from NHANES tracks an almost perfect linear correlation between decreasing levels of MTBE in the U.S. population versus the production of MTBE in the U.S. So that's one specific example of these kinds of studies being able to track the effect of specific policy changes. So hopefully that could be incorporated into some of the discussions for AB 617.

CHAIRPERSON SCHWARZMAN: Oh, go ahead, José.

PANEL MEMBER SUÁREZ: This is a question for Victor actually. So as technology advances, there's more interest on minimally-invasive biomonitoring in general. So give your expertise on VOCs, can -- do you have much experience -- or can you tell me much about exhaled VOCs, how well they correlate, for example, with urine or blood levels? And what are your thoughts of the use of that?

DR. DE JESÚS: Right. So we have examined exhaled breath. And it presents a very interesting challenge, in that the presence of moisture really confounds the analysis.

Right now, we have a study where we're looking at nail salon workers' exposures. And unfortunately, this study looks at both exhaled breath and blood samples. So it's a directly paired comparison. We have not been able to make such a comparison because the analysis from the exhaled breath is not where it needs to be to be able to do that kind of comparison. So it's -- right now, exhaled breath, in my, opinion can only be used for, you know, super high exposures, and only for a few specific compounds.

You know, the -- in case of nail salon workings -- workers, ethyl acetate, because that's a solvent that's present everywhere. And that we can see

very well. But beyond that, it is very, very difficult to properly examine exhaled breath, because of the moisture issue. And we're actively working on that, and hopefully in the not-so-distant future, I can provide a better answer for you. But right now, that is technically challenging.

CHAIRPERSON SCHWARZMAN: I had a question, maybe mostly for Yana and Heather about. I'm sure you're aware of the article that came out about two weeks ago in science looking at volatile chemical products, sort of outpacing mobile and stationary sources of, you know, exhaust and petroleum, or at least combustion product -- sources of urban organic emissions not suburban or rural.

And it's one of the things that led me to think about monitoring beyond just like stationary outdoor air monitoring as part of the monitoring that happens under the scope of 617. And I just wanted to pose that to you, and see where that is in your thinking and whether, you know, particularly the sources they called out are pesticides, coatings, printing inks, adhesives, cleaning agents, and personal care products.

And some of those are very much indoor exposures, and some of them are very personal level exposures, and there are certainly -- I'm no expert in the quality of personal level air monitoring or -- yeah, VOC and air

monitoring devices, but there certainly are some. And I would defer to anybody who knows more about them than I do.

But anyway, I just wanted to raise that category of exposures and ask you how you're relating to that idea?

MS. ARIAS: So I will give time for Walter now to walk up to the mic. And he can talk about the monitoring itself.

Certainly, we are aware of the data and for the consumer products like all of the different emission sources that are under our jurisdiction, if you will. Obviously, we're constantly looking at the data. We're constantly watching the use from the public looking at any new exposure data that we can get. As that data becomes available, than we always look back at our existing regulations to determine whether or not we need to either amend regulations or are we on the right track?

So I can't speak to that directly in this particular case, but I do know that the staff are aware of this, and I'm sure are, you know, looking to see whether or not there needs to be any changes in the regulatory aspect. If, in fact, that is true, then I'm sure they'll move forward with that. How that relates to -- go ahead.

CHAIRPERSON SCHWARZMAN: I just mean specifically in the monitoring aspect.

MS. ARIAS: Right. So now that Walter is there --

CHAIRPERSON SCHWARZMAN: Oh, okay.

(Laughter.)

MS. ARIAS: -- he can talk about any of those technologies that are available.

MR. HAM: Walter Ham, CARB.

So one of the things we're trying to do in the monitoring plan, which I think you've highlighted is, is that we're trying to give districts and communities options as far as different tools for monitoring, because stationary long-term monitoring using very advanced FAM FRM equipment has some -- may not be able to capture the granularity that we need to assess personal exposure and things like that.

So one of the assignments that we have is to review different technologies. And some of the technologies that we're looking at are things like remote sensing satellite-based, aircraft-based sensing air sensors. So we have -- we see a lot of communities now that are using air sensors. And that technology has come a long way in the last few years. There's mobile monitoring which was alluded to with the Google study, and there's fence-line monitoring, and different other -- all kinds of tools that are now available.

And so one of the objectives that we have for the monitoring plan is to give the districts the flexibility to use the appropriate tool for the question that the community or the district want to ask.

As far as VCPs - and I'm -- I appreciate that you brought up that article. It's a good article that we're reviewing very closely. As far as personal exposures to VOCs, most of the -- there are some sensors that are available. These are VOC sensors. They're PID based.

But the big question that we have as a regulatory agency and from a personal exposure standpoint is what is the data quality? Technology is advancing very quickly. And it's very difficult for agencies and groups to keep up with how well they are performing. So one of the things that we are doing as an agency is we are setting up an evaluation program similar to South Coast's AQ Spec Program, where we'll be doing both laboratory and chamber-based evaluations of these sensors to see if they could be used for personal exposure and other applications.

CHAIRPERSON SCHWARZMAN: Great. Thank you. It's just a -- it makes me think about sort of with this connection between biomonitoring and 617 processes that are taking place under 617 about, you know, if there are particular sources of exposure that sort of rise to the

top or become of interest under 617, that it would be interesting to have that connection between biomonitoring and CARB, because the chem -- the biomonitoring chemicals of interest would be different, right, depending on the -- on the source -- the exposure source of interest.

CALEPA ASSISTANT SECRETARY GARCIA: I was just going to mention right now we are at the input stage. So we've put out the concept paper on some of these concepts. And we'll be developing a lot of this in a lot more detail.

I think one of the things that will helpful is to consider this exactly. I think we'll see -- I would not be surprised if wee see requests to include indoor air monitoring around agricultural sites in farm worker housing, for example, around refineries. We've seen some of that already done in Richmond and other areas. So I would not be surprised if we continue to see that. And I certainly hope we do prioritize that, and want to keep that as a top priority.

CHAIRPERSON SCHWARZMAN: Great. Tom.

PANEL MEMBER McKONE: In terms of community scale trends, I don't know if looked at the -- a year ago, I heard a talk from somebody from Australia who was actually looking at drug use. And, of course, nobody gives you good urine samples or anything. So he went to the waste

treatment facilities, and he could see trends -- very clear trends of drug use in different communities going up and going down by biomonitoring basically the urine and feces of the whole community.

Is that, I mean, something that Anyone's thought about. Again, it's not person-by-person. It's like whole communities, but he claimed that what's going into a waste treatment plant is a petty good integrated sample for what's coming out of people and going down the drain. I don't know about retention and all the other. He did a lot of work correcting and learning how to do it. But his only interest was not in who, but how much, and what the trend was, and to see patterns. And he said it was really good for that, and helpful to law enforcement.

CHAIRPERSON SCHWARZMAN: It's intriguing.

Carl.

PANEL MEMBER CRANOR: This is a quick follow-up to something Meg mentioned -- Megan mentioned. I've read an article about houses that have been around for a long time on the southern Texas/Mexico border, that -- I'm not sure what they were used for, but they were filled with long-lasting substances. So if there are communities that have that kind of housing for, for example, farm workers and so forth, might be very interesting to see what's inside, what shows up on the monitoring.

CALEPA ASSISTANT SECRETARY GARCIA: As I presentation at the outset of my presentation, I mean, biomonitoring is, of course, instructive in the activities of so many of our boards and departments. And the Department of Toxic Substances Control and the State Water Resources Control Board have been jointly really thinking about how to approach some vapor intrusion issues in buildings, throughout the Central Valley. So I think that's something that we're approaching in somewhat of a different context, but could definitely have some overlap as well with AB 617 if go there into the sort of indoor air monitoring realm, and start thinking about some of those things. But I thought I'd mention that.

CHAIRPERSON SCHWARZMAN: Sara.

MS. HOOVER: Yeah. Hi. Sara Hoover, OEHHA. I just wanted to also -- because I talked about the link to 617, but I want to talk about the link to Victor's work, because we were so lucky for him to arrive. And I'm really excited about the stable urinary metabolites of VOCs. It's extremely powerful as a way to get at exposure directly, and not indoor air monitoring, not personal monitors, but directly.

So we're actually in discussions - it's very exciting - to try to write a proposal to do a pilot where he can take some of our samples, our urine samples, from

the East Bay Diesel Exposure Project and run the VOC metabolite.

It also links up to this huge report we just finished at OEHHA for gasoline-related exposures over 1996 to 2014. And one of the compounds of concern is acrolein, which Victor's assay covers. So I feel like that's a really great opportunity to start to look at some of -- compounds of significant concern in a way that we haven't been able to do before.

So that's -- I just wanted to give a plug for Victor's excellent work there. And I hope we have a chance to collaborate with him in the future.

And the only other thing I wanted to mention with regard to the question that was raised about how do you define community, so 617 actually does link to a statutory definition of disadvantaged community. So that seemed maybe relevant to talk about in response to the question of how you define community.

MS. ARIAS: It links to the definition of disadvantaged, but not necessarily community as a whole. So we are using, as I mentioned, the definition that is articulated with -- in respect to CalEnviroScreen for disadvantage. But the community itself is not defined, and we are seeking input on that.

CHAIRPERSON SCHWARZMAN: Great.

Yes, please. Jianwen.

DR. SHE: This could be a question or a comment to Victor. And just like Sara said, I really admire you give us opportunity to learn five different method for accurate exposure assessment in blood, and the chronic exposure of the VOC exposure in urine samples.

As everyone know, VOC in a chemist's point of view is most simple chemicals. The simplest -- simplicity of the chemical doesn't make the analytical work easier. So that's one area from my 30-years career I tried to avoid, so -- to analyze VOC.

But for me, is ask advice, for example, I see the analytical challenge must lie on VOC because of vapor pressure -- it's easily vaporized. It's everywhere. You know, analytical lab like the blood sample even cleans, very clean. But my laboratory set-up may need to be also cleaned. This is one challenge.

Second part the stability of the VOC may be -- you know, the blood sample or urine samples need a special attention. So follow that one I think for State Laboratory to do the VOC in blood is hard. But just like Sara noticed already, for the metabolite in urine and maybe very easier for us to do that -- but that easy still may require us to collaborate with you differently. So the long term if the State needed the capability, for

example, the standard you have for 30 of the VOC may be hard for State got them -- even we get them, then maybe degraded very quickly.

So that from all of this point of view, what's your recommendation if for the laboratory require capability to do this kind of thing any advice you have for us?

DR. DE JESÚS: Sure. So let me start with the physical space. For VOC -- I agree with you 100 percent on the blood VOC assay. I think that while the assay itself is simple, it is certainly subject to all of the environmental conditions that come with running a laboratory. And I'll give you a specific example. One of the analytes that we monitor is methylene chloride or dichloromethane.

Down the hallway from us is the cotinine laboratory for the Branch, and they started doing an assay where one of the solvents was methylene chloride. And all of sudden our QCs just went all of whack.

So, we have a truce right now.

(Laughter.)

DR. DE JESÚS: But -- because, you know, work has to continue. But we certainly have to be very mindful about the physical condition and the physical cleanliness for that particular assay.

VOC metabolites in urine is certainly more forgiving. It's -- it's also a simple assay, and your existing equipment could certainly do it. In terms of standards, every standard that we use is actually commercially available. I believe we have just one custom synthesis. We are certainly willing to share some of our material with you, if you are interested in developing the capability, as well as the method and, you know, the ins and outs, if you will.

In terms of again physical constraints, very -- no different than any other BSL-2 laboratory that -- or actually your existing laboratory from what I saw yesterday. So I strongly encourage you to explore that -- establishing that capability, and we'll be more than happy to help.

DR. SHE: Thank you very much.

CHAIRPERSON SCHWARZMAN: Excuse me. I'm sorry -- it's just about -- we have to take a break but we have one person who's really been waiting to make a comment or question. Go ahead June-Soo. And then we'll break

DR. PARK: I'll make it very short. Actually, my question is very short. As we've shared with you Victor, you know, I'm the person who's most excited. You know, more excited than Jianwen was --

(Laughter.)

DR. PARK: -- because you -- I told him we shared the information. We just -- our department kindly got us a GC/Q-TOF and GC-MS/MS. We do pair function, so we can put the STME -- SPME on it. So I think -- I know where to -- you know, the -- I know where to find you.

(Laughter.)

DR. PARK: So that's the excitement there.

One thing I was a little bit shocked, you know, you use so much blood, 3 ml for the SPME. I wonder if you do anything after the SPME experiment, because 3 ml is kind of a -- it's a -- we can do -- you know, the 100 chemicals of using the 3 ml, that's one question.

You know, I also liked this opportunity. You know, it doesn't matter, you know, that we are short hand -- you know, our supervisor can go back to lab to operate, you know, the QTOF MS/MS. It's a lot of fun there. So that' why the -- we want to expend -- the first thing, you know, that we purchased -- or we asked to purchase that instrument was -- we have our priority list for the Biomonitoring Program, the cyclosiloxane is one, you D-5 D-6, and some fragrance chemicals.

You know, we know the sorrow, you know, the how difficult to analyze those volatiles. You know, the one time we done the experiment for the, you know, the musk -- you know, the -- all of sudden, musk was kind of hit the

top, you know, saturated. You know, well, something -- are you wearing the perfume this morning? So I think there are -- we know the nature of, you know, the -- of difficulty, you know, how hard it is.

So but we still -- it's very challenging, but we don't want to give up that opportunity, you know, that we still -- after the -- we got the methods down with musk and cyclosiloxanes. We want to expand it to the -- we just stopped after we analyzed their phthalate -- urinary phthalate. You know, a lot of opportunity there.

Also, the -- we've been having -- meeting with the Department. I don't know if you guys are interested in some exposure by -- also, the -- one thing, you know, that we collaborating with the Pesticide Regulation, you know, the -- we're looking at some opportunity, you know, to look into the current used pesticide in the wastewater stream.

I think definitely, we can expand that to the occupation of the -- some personal exposure labels. So I think we can work with CARB too.

So I just want to let you know that we are so excited.

CHAIRPERSON SCHWARZMAN: Thank you all three of you so much for your work, and also for coming to talk with us about it. And we're going to take a break and

resume at just five minutes of 4:00.

MS. HOOVER: You can make it 4:00.

CHAIRPERSON SCHWARZMAN: Okay, 4:00 o'clock. Great. That's what I was hoping you would say. We'll resume at 4:00.

(Off record: 3:45 p.m.)

(Thereupon a recess was taken.)

(On record: 4:01 p.m.)

CHAIRPERSON SCHWARZMAN: Can we reassemble. Let's restart.

So our next -- I'd like to restart the meeting as soon as we can. If you're in a conversation, please wrap it up. We're going to restart the meeting.

So the next item on the agenda is a presentation and demonstration of an upcoming website feature that's designed to increase awareness of Biomonitoring California findings. And I'm happy to introduce Amy Dunn, who's a Research Scientist in the Safer Alternatives Assessment and Biomonitoring Section at OEHHA. Amy has been with OEHHA since its inception in 1991, and has been part of the Biomonitoring California Program since the Program began in 2006.

And I would also like to welcome Uli Weeren, who's a web designer and developer at Studio Weeren, which he founded. Uli and his team created the main OEHHA

website, as well as the Prop 65 Warnings website. And they also partner with many non-profit organizations and businesses to develop custom web applications.

Amy and Uli played pivotal roles in the development of Biomonitoring California's widely lauded website, and continue to implement improvements to the site. So we'll be hearing about one of those improvements today. And we're going to have a brief presentation with demonstration, and then a bit of discussion and feedback, and then a little final piece of the presentation.

(Thereupon an overhead presentation was presented as follows.)

MS. DUNN: So good afternoon, everyone.

We're excited to be here to share with you this upcoming website feature that we have been building to help increase awareness of the Program's findings.

--o0o--

MS. DUNN: Briefly, I'll be describing the purpose and format, and then we'll do a demonstration, and as Meg said, have a pause for some feedback on the structure of the website. And then we'll turn to a little bit of discussion about the findings to fill out the website, and get your feedback on our approach to doing that.

--o0o--

MS. DUNN: The purpose of this addition of -- to the website, as has been mentioned, is to increase awareness of Biomonitoring California's findings. Our current website already has information about our findings in the form of publications from our studies, as well as information in the results database.

However, this is only reaching some of the audiences who potentially are interested in what our program is finding. And so we wanted to create a way in for people who may not be scientists to better understand what is coming out of the Program, and why it might be relevant to their concerns.

Uli and I, with the help of Laurel Plummer in the initial stages of the development, considered how we might best serve up this information in a form that would capture people's interests. The original idea centered around the fact that people tend to be interested in what's happening in their own communities, and so we were approaching it geographically.

However, because most of the findings are not location specific, we also wanted to broaden the approach to include other avenues that would make sense to people, as you'll see in a moment.

The format of the feature is to have multiple layers and to have an intuitive -- or what we hope will

be, an intuitive interface. We plan to do some testing once we have the feature fully built and populated to make sure that people can find their way to and understand the findings that we're putting into it.

And we're building it in such a way that existing website content will be interwoven with the feature, so that people can easily dig more deeply, once they find something they're interested in.

Uli.

--o0o--

MR. WEEREN: Yeah. So, hello, everybody. So this is kind of the structure of the findings feature. We have a home page or a landing page where you have like three ways to dig into the findings. So one finding -- one pathway is through the chemicals. So if you know the chemical you're looking for, you can select the chemical, and then go this pathway.

We also have these group of people. So if you're looking for like a group of people, you can go through this way, and that's -- you want to check it for children. You can see the findings for children and find these, or you can also explore the findings through the regions. So if you know your region you're looking for, you can click on a map.

And then you see, let's say, the San Francisco

Bay Area. You click on this, and then you get all the findings within the San Francisco Bay Area, and also additional information about this area.

And then in the end, you end up, if you want to dig deeper, at the specific finding with all the information about this finding.

--o0o--

MR. WEEREN: And now we -- we can start the demo. There you go.

Here we go. So this is the landing page. So here we have the chemicals. Here you can search for a chemical. List of all the chemicals we have in the database. You can also -- you could start typing for a chemical and then can search for it.

CHAIRPERSON SCHWARZMAN: Can you speak a little more closely into the mic.

MR. WEEREN: Oh, sorry.

And then we also list like the most searched chemicals. So if you -- like popular chemicals in the database.

And then we have a list of group of people, you know, that might be interested in, and then these are the areas we -- or the regions within California you can search for.

MS. DUNN: So we assume that some of our audience

will be interested by chemical. So just to show you -- give you a little tour of the feature. And I might have forgotten to mention earlier, this is under development. And so it's not filled out, but we have examples in there to give you a feeling for what it would look like.

So, for example, if you click on the polybrominated diphenyl ethers under chemicals, you reach a page like this. And this will give you a little bit of information about this class of chemicals, connect to more information about this class of chemicals, that -- for information that's already on our website.

And then beneath that, you have these -- are clickable icons that will take you to each of the studies within the program that are measuring this class of chemicals. Beneath that, you'll see some of the findings related to measurement of this chemical in people.

And this is a summary finding. Firefighters have elevated levels of PBDE flame retardants compared to the general population. So that's a findings statement, a simple, clear, understandable to someone potentially, PBDE flame retardants, not necessarily that easily understood. But this is what we're aiming for is some succinct statement.

And then this summary gives you a little information about the project, the people who are studied

and what the chemicals are. But if you click on it, then you'll go to a page that's going to give you more information, so you can dig more deeply, where did this come from, you know, some of the caveats that might be there for the results, and what the studies are that support this finding. And then links to more information for -- like I said, so people who want to dig more deeply can do so.

If you then are -- maybe possibly coming in with a different set of questions, and you're thinking about who are the people that I'm interested in, if you start instead with firefighters, you'll come to this page, which, you know, currently is -- just has this one study, but as you heard earlier today, there's another study happening right now.

And you can learn about all the studies that we have that might relate to this group of people, and you can see that this finding that we just looked at, you can also reach it through this page, so that people can find the same information regardless of how they climb in.

--o0o--

MS. DUNN: As was mentioned earlier, there's also -- we have as part of the example children. So just to give you a flavor of this in kind of a different population group. So we have a number of studies that

have included children. And right now, we only have this one -- oh, we have a couple -- just a couple example findings. But it's the same concept. You would click on this, and it would take you to more details about this particular finding, including the studies that came -- it came from.

And then last, but not least, the regional approach. As you Uli mentioned, there's -- each of these regions you can go in through the regions. And these are the same eight regions that the CARE Study, which Nerissa described earlier have used to divide up the state. So once we have the data from the CARE Study, they'll fit right into this tool that we're building.

And to show you what it looks like, we have the San Francisco Bay area. So you can see, we have a little bit of information about the area, the population, the counties included, and approximately how many participants in our studies were drawn from this area.

We have this interactive map for people who are -- okay. Yeah. People know how this works.

So people can play around and figure out, you know, if their region is included -- if their community is included in this region. We have the studies conducted as we have on the other pages. And the findings -- we have this one example finding, and then we also -- on this

page, we're showing the partnerships that we have with the studies that have been conducted in this area. So we're, you know, connecting back up with who -- who are we joined up with in this community in this region.

So that, in a nutshell, is the structure and the approach that we're taking with this feature. I think we could go back to the slides.

Oh, okay. Oh, wait. Go ahead, Uli.

Could you go back to the browser?

Yeah, sorry. This is the slide.

AGP VIDEO: Did you close it?

MS. DUNN: I didn't close it, no.

It's the left one.

AGP VIDEO: He had it on Chrome.

MS. DUNN: No, it was there.

MS. WEEREN: Yeah.

MS. DUNN: No, the far one. No.

Oh, no. He just closed it.

CHAIRPERSON SCHWARZMAN: Maybe it would be -- since the next thing we're going to do is do feedback and discussion maybe you guys could be getting back it up --

MS. DUNN: Yeah, exactly.

CHAIRPERSON SCHWARZMAN: -- while we do that and we can see whatever.

MS. DUNN: So just go to the slide.

--o0o--

MS. DUNN: Okay. All right. So that's the basic format, and we'd like your feedback on what might work, what you think might be missing, or what you can -- where you can see we might want to think about additions. And we do have the screen shot of the home page, in case that's helpful, so we can move to the discussion.

CHAIRPERSON SCHWARZMAN: I have a question, but I won't -- okay. Go ahead, Carl.

PANEL MEMBER CRANOR: One thing that strikes me right off -- I don't want to make a joke of it, but it looks like it's been designed by scientists.

(Laughter.)

PANEL MEMBER CRANOR: I'm wondering if there's a way to put the chemicals typically found in or where furniture, cosmetics, things like that, which is I would guess more likely to grab somebody's attention, unless they're a real chemical-phile.

So I don't know if there's a good way to work that in, but one phrase that occurs to me, PBDEs typically found in flame -- as a flame retardant, maybe in particulars, things like that, so that maybe that rings a bell, if somebody doesn't think about a chemical name.

MS. DUNN: So the idea being that we might have a way for people to climb in based on exposures they're

concerned about, like exposures in the home?

PANEL MEMBER CRANOR: Well, that would be a fourth way.

MS. DUNN: Okay.

PANEL MEMBER CRANOR: But what I was -- without going -- without having four columns there, maybe you could combine with the chemical acronym, "typically found in" or "typically found around" or something like that, so that that jumps out. And I don't know.

MS. DUNN: Yeah. Yeah. No, I --

PANEL MEMBER CRANOR: It seems to me that that would be a way to grab the general public's attention more than with the chemical name, which some people would find attractive?

MS. DUNN: Right, the chemical name avenue really reaches an audience that is the technical audience, as you're -- as you're saying.

PANEL MEMBER CRANOR: Yeah.

CHAIRPERSON SCHWARZMAN: Jenny.

PANEL MEMBER QUINTANA: Just to follow up, maybe you could have different ways to search for the chemical. You could search by alphabetical name. You could search by use, I think a lot of chemicals are solvents, pesticides, you know, fragrances or something -- search by -- you know, maybe there's different ways you could add

a search feature in the chemical to get a little more user friendly like you're saying.

CHAIRPERSON SCHWARZMAN: I think there are some places that already do that to some degree like the Chemical Data Commons or Pharos that you could look to a little bit for the multiple ways a chemical is listed. I think they don't have as many of this sort of use or application information, which I totally agree would be really helpful of like how would someone naturally group chemicals, not just chemical classes like PBDEs, but flame retardants, or something, to look them up. Did you have an issue, José?

PANEL MEMBER SUÁREZ: Sure. Well, first of all, I want to say this is phenomenal. I think this is the way that you've been working, and this is the direction definitely to go. This is great. I'm really amazed that we can have this access and that you grouped it by groups of people and what we know about those. And I think that's excellent. So I wanted to give you kudos on that.

I agree with what we have been talking about here with having an additional way. So people can just click. I want to know about diesel exposures and then that gives them the list of the diesel ones and they can look at that, right?

Another thing that may be interesting is looking

at trends. Maybe down the line after you've developed this, putting a trends piece. So an important piece of biomonitoring is are things getting better or are things getting worse. So then by a trends time, we can see what has been happening over the years for some of the studies that we do have longitudinal information. So that could be something that could be informative as well.

CHAIRPERSON SCHWARZMAN: Oliver.

PANEL MEMBER FIEHN: Well, especially for people who are then finding -- they're clicking on children. They're finding something is higher in children they would like to know what it means. I know that is difficult. I know that it's difficult to put it into a context and so on.

But, you know, just saying that my -- children in this region are higher exposed to chemical X. Should I be worried? Should I move out? Should I contact the authorities? Call 911?

I don't know.

(Laughter.)

PANEL MEMBER FIEHN: What do I do with that information, right, and how high is higher, you know? So I know that these are all very delicate questions, but this is the obvious next question a person would ask.

CHAIRPERSON SCHWARZMAN: Just to go from that

point, Oliver, and I agree I would echo what José said about this is wonderful as the first pass, is to say, you know, Biomonitoring does so much with results return, I imagine you already have a tremendous amount of interpretive material.

And so maybe that's a relatively easy place to start answering those questions is by drawing on the results return material that you already have developed painstakingly that interprets results. A question for that -- I mean, this is maybe -- this is probably asking too much. But to put it within the context of NHANES data for the same chemicals, along those lines of like where does this sit relative to X? Like is this high, is it low?

And one place that we have data on that is from national biomonitoring. So I don't know if that's in the realm of possibility, but it would be interesting if it could be.

My main suggestion, which seems like it might not be possible is that orienting the results by study, speaks to those of us who know what the studies are. But if I were just going in and wanting to know biomonitoring results, I would want the results, not the study. And I wouldn't want to have to click through the individual studies to find the results.

So like if I go into a chemical or into children, what I get is a list of studies that have been done that biomonitored for that chemical or those people. What I would want to see in -- then I wouldn't -- then you have to click in each individual study to find the results.

What I would want to see when I click on PBDEs is what are PBDE levels in whom, and it would be like a data table. But it would be an understandable data table, not necessarily for -- you know, that would require science -- to be a scientist to interpret, but I would want the actual data there not to have to click through a study, and then come back out and go into the next study, and then come back out and go into next study. Do you see what I mean?

MS. DUNN: I understand what you're saying. I think one of the complications -- so, I mean, people can get to our data tables for each study by clicking through, or on the PBDE page, for example, we would link to the results for PBDEs. But it's not -- we've explored before the possibility of combining across studies. And currently, the studies are too disparate. It's not really a possibility to combine across studies.

So I think it might be more possible once we have more data, for example, from the CARE Study where things are more comparable, but --

CHAIRPERSON SCHWARZMAN: Yeah, I don't actually mean combining the studies' data --

MS. DUNN: Okay.

CHAIRPERSON SCHWARZMAN: -- because I recognize why you can't. I mean that the -- that what you land at is the results. And then if you want, you can link to what was this study. Like, oh, I want to know about the CYGNET study, but I would want to see what were the results, what did they find?

PANEL MEMBER SUÁREZ: I thought that was though -- like if you click on the Children, I thought there was a summary in addition to listing the different studies.

CHAIRPERSON SCHWARZMAN: Well, there's a summary of a couple things, like hi -- like what have we learned? It says one thing maybe that --

MR. WEEREN: So like these studies are kind of --

CHAIRPERSON SCHWARZMAN: Yeah.

MR. WEEREN: -- additional information here.

CHAIRPERSON SCHWARZMAN: Yeah. Like one thing is pulled out about mercury poisoning, and then what's the second thing, higher levels of PCBs. But that's not all the information that's included in those -- in, you know, CHAMACOS, CYGNET, et cetera, et cetera, HERMOSA. There's lots more in those studies than is summarized in the what

we've learned.

MS. DUNN: But -- so the idea -- that's the idea of, for example, if we went to CHAMACOS, we would -- I mean, I'm -- I'm a little hesitant to go there, because we've just, you know, had trouble getting back here, but --

(Laughter.)

MS. DUNN: If you clicked on this page, you would --

MR. WEEREN: I think it should be fairly safe.

MS. DUNN: Okay.

(Laughter.)

MR. WEEREN: Do it.

MS. DUNN: Okay -- you would immediately get information. Here's -- you know, here's what this -- here's what this study was about, here are the data tables. So like that's already built in.

CHAIRPERSON SCHWARZMAN: I'm not dismissing that this is helpful information.

MS. DUNN: Yeah.

CHAIRPERSON SCHWARZMAN: I just -- it's been my experience going to the Biomonitoring site that all of the information is accessed through the studies, and it's not how I want the information.

PANEL MEMBER SUÁREZ: So if you click back -- in

other words, if I understand correctly what you're saying --

CHAIRPERSON SCHWARZMAN: Yeah.

PANEL MEMBER SUÁREZ: -- you'd like to have more of those summaries, the higher levels. You'd like to have like a list of 20 of those or whatever findings there are.

CHAIRPERSON SCHWARZMAN: Exactly. I want the findings --

PANEL MEMBER SUÁREZ: Is it just because it hasn't been populated yet?

MS. DUNN: Right, it's just a draft.

PANEL MEMBER SUÁREZ: Is that why we don't see any more?

MS. DUNN: Yeah.

PANEL MEMBER SUÁREZ: Okay. So maybe that's --

MR. WEEREN: And maybe we can also change the order, so that these studies are at the bottom of the page and the findings are at the top of the page.

MS. DUNN: Yeah.

CHAIRPERSON SCHWARZMAN: Something like, I mean, prioritizing in terms of quantity and how much it's -- you want the findings, not like, well, these are the studies that have been done.

MR. WEEREN: Um-hmm.

CHAIRPERSON SCHWARZMAN: And I know that within

the program, you know, we think about, oh, PBDEs. Well, those were looked at in these three studies, and they were looked at in different ways, so we can't combine the data, which I totally understand.

But in terms of somebody coming in, they want to know what are the findings on PBDEs.

PANEL MEMBER FIEHN: Can you click on this?

MS. DUNN: I'm not sure if it's -- so this is -- this is just a draft. Sorry.

PANEL MEMBER FIEHN: Oh, I see.

CHAIRPERSON SCHWARZMAN: So I think to my point, I would -- I mean, this is just a draft, so maybe this is where you're headed. But on that, if you click on the mercury, I would then want to see the data table, and then you could go look at HERMOSA, if you want to find out about HERMOSA.

But you're just providing another access point to the study description, which is not what people are going to find out. I just don't think people are going to find information about the study. They're going to find out what was found.

MS. DUNN: Yeah, I mean, I think maybe this is a slightly better example.

CHAIRPERSON SCHWARZMAN: I see puzzled looks. Maybe I'm just not being clear.

PANEL MEMBER FIEHN: Yeah. And also --
DIRECTOR ZEISE: Go click on the chemical.
MS. HOOVER: Yeah.
DIRECTOR ZEISE: Let's go to the chemical and see what happens.
MS. DUNN: Yeah. So --
DIRECTOR ZEISE: If you go to the chemical, Amy. If you go to the chemical segment and click on -- you know, you have the three ways of looking at it --
MS. DUNN: Right.
DIRECTOR ZEISE: -- and you click on a chemical, what do you get there?
MS. DUNN: So right now -- so it's sounds like -- I mean, what Meg is saying is it would be nice to flip -- instead of having the studies be the first thing, to have the findings be the first thing. But -- so you get these -- you get these findings.
And this is where the, you know, different results from different studies that you can't really combine. So, for example, if you click on this one, this is about the flame retardant levels decreasing over time, what June-Soo was talking about earlier. It's actually more complicated than that, right?
So -- but I mean -- I guess I have a little resistance to the idea of bringing data tables into this,

because it's meant to be for a general population that is possibly put off by tables of, you know, three decimal points in every number kind of thing.

But, I mean, I think it seems like what you're thinking is that people are not -- that somehow this isn't reaching the level of information that you're looking for, is that right?

CHAIRPERSON SCHWARZMAN: Yes. But that's not what I mean to elevate, because I know it's not really aimed at me.

(Laughter.)

MS. DUNN: Well, I mean, it should satisfy you as an audience. You know, it -- so I think it's still important.

CHAIRPERSON SCHWARZMAN: I think what I could say is I think it should elevate the findings, not the studies. And so I would want to see more findings than the average person that you're targeting, but maybe you're just meaning to provide summaries not data tables, which is fine. Although, I think there is data that you could provide that would not be the complete data table, but that could be mean and variation compared to NHANES or something like that. Like simplified data, not the whole data table, or something. But I think I guess the bottom line that I'm getting at is people will come to this to

find out -- to see the findings, not what studies have been done.

MS. DUNN: Yeah.

PANEL MEMBER SUÁREZ: Not necessarily -- I mean I would be interested, maybe because I am biased and I like to do research, but I do appreciate having a list on top of that, because it takes just a little bit of space saying these are the studies.

And by the way, the important part of this page really are the findings, which is I think what you're getting at.

CHAIRPERSON SCHWARZMAN: Yeah. I'm not opposed to having the studies there. I just don't want that to be the only accesses point for the findings.

DIRECTOR ZEISE: Amy, I think we could probably play around with it and kind of come up with some visuals that could --

MS. DUNN: Yeah, well, I think it was help -- yeah.

DIRECTOR ZEISE: Yeah, and I think -- you know, there are various approaches that one could use using existing technologies to come up with some visuals. So maybe we should play around with different ways of showing it to try to get -- I think I understand you want to see all of the data on a particular chemical even perhaps, is

that right?

CHAIRPERSON SCHWARZMAN: I guess depending on what the access point is. And it wouldn't be all the data, because I know that's not feasible.

DIRECTOR ZEISE: Not all the data, but I mean summarized.

CHAIRPERSON SCHWARZMAN: Summarized, yeah.

MS. HOOVER: Let me -- let me just say, we were all talking amongst ourselves, but I think -- so -- and Amy did mention, you know, this is in the results database by chemical, right? So you can already see in the results database all the findings grouped by chemical. And what Amy is trying to, do and Uli, they're translating that into findings that are readable and accessible.

Now, let me just mention, the thing about NHANES, we actually talked about adding a comparison to NHANES. As Amy mentioned, there's some difficulty in integrating our findings, because they're convenience studies. It's not necessarily comparable. So we actually didn't do -- we didn't incorporate that in the results database.

But I think the elements of the findings, we can actually bring in some comparisons in the findings to NHANES. And the other thing we can try to do is I kind of think I know what you're saying, which is also trying to integrate.

So, you know, if we have one finding, and it's common across five studies, talk about a finding, and not, you know, link it to a single study. But I think that's going to happen. It's just the examples we have right now are simple examples. Is that -- I don't know if that helps at all.

CHAIRPERSON SCHWARZMAN: That's good. And I do really appreciate these summaries of like what we've learned. I think that's -- I guess what I'm getting at is that's the essential piece that I think people are coming for is like what we've learned from doing these studies.

Yeah, Carl.

PANEL MEMBER CRANOR: Back to a word that Amy used -- excuse me, my voice is bad today. I would think that if I -- if I posed the question to my students, what would you like to know? They don't know any chemical names, but they might want to know what things am I exposed to? I think you used the word "exposure", but something like that more common, more accessible, and something that you would think of a much less well tutored person might pose that biomonitoring can help them with.

You probably don't want to say, but something like what toxic chemicals are -- am I exposed to? Maybe you don't want the word toxic there, but -- for various PR kinds of reasons.

But that's sort of the idea. And what do I do -- you know, in what parts of my life do I find these things, and what are they, and what do they do -- what -- are they in my body, and to what extent are they in my body? And sort of going from simple triggers to more -- however much more information they want to learn from it.

Now, that's just me. I think about my students. They don't have a clue about chemical names and that sort of thing probably, but they're not science students either.

MS. DUNN: Maybe your students could helps us to test --

(Laughter.)

MS. DUNN: -- once we get something built.

PANEL MEMBER CRANOR: Well, I was thinking actually, you know, focus groups, but yeah, maybe students or something like that, sure.

CHAIRPERSON SCHWARZMAN: I have one other question about other potential subgroups of people. And I know it takes having sort of the statistical power to be able to create subgroups. But will it be possible to single out other populations whether they are racial, or finer regional, or I guess -- I don't -- I guess probably occupationally exposed is not going to be relevant, but it depends on the study.

MS. DUNN: Oh, we have firefighters there.

CHAIRPERSON SCHWARZMAN: Firefighters, I guess, yeah. Do you anticipate being able to do any finer segments?

MS. DUNN: I mean, really the only limitation will be what the findings -- what findings we have. So if we have findings that are relevant -- for example, one of the findings we have in this draft site is about infants. So maybe we split infants out from children. I mean, I don't think there's any real limitation in the feature itself. It has the capability. It's more what do our findings have.

CHAIRPERSON SCHWARZMAN: Yeah, I just wonder if there might be -- if one way to bring people in is to anticipate what some of the potential interest groups. And like there are like the ACE studies that are specifically targeting Asian-Pacific Islanders. And so could we pull out those results?

MS. DUNN: Sure.

CHAIRPERSON SCHWARZMAN: And people who are particularly interested in Asian-Pacific Islander populations could access them.

MS. DUNN: Absolutely, yeah.

MR. WEEREN: No problem.

CHAIRPERSON SCHWARZMAN: Jenny.

Oh, sorry. Tom and then Jenny.

PANEL MEMBER McKONE: I have to leave soon, so I want -- how hard is it to put in a little video? I mean, some sites I've seen that are really effective just have a one-minute explanation that you click on. And I know -- I mean a mark of a good website is that you don't have to explain anything, but this is a little complicated. So just a video of somebody giving a narration of what biomonitoring is, and what we do that would be right on top.

And then -- then every -- I think it would make a lot of -- not a tutorial, but just an explanation. And then people go, oh, it's about chemicals. It's about people. It's about California. If it says all that, then this all makes sense.

And I think some of it is we're trying to intuit -- or interpret what everyone would want to see, but maybe it's helpful to put the simplest possible thing up top, which is -- and people love videos. I mean, if you look at how this is done now, and these short ones, right? Facebook, like little quick videos that carry a message.

And some of them are -- I've seen some done really well. I've actually had -- used some in class, because they're so effective at covering a point. I mean,

they -- you know, they don't cover everything, but they're a good starting point to engage you in the topic.

MS. DUNN: That's a great idea, yeah.

CHAIRPERSON SCHWARZMAN: I want to resume the presentation --

MS. DUNN: Yeah.

CHAIRPERSON SCHWARZMAN: -- because they have a little bit more to show us, and then we still have time for comments and suggestions.

MS. DUNN: So can you move back to the slides? Steve, can you move back to the slides.

--o0o--

MS. DUNN: Okay. So from here what we'll do is taking all this great feedback that you've been giving us - so thank you for all the new ideas that you're putting into our -- the hopper in terms of how we can make this a better feature more useful for people - we'll be continuing to build it. And then the next thing is to populate it with findings. And that means developing findings from what the Program has done. And we'll be talking about that in a second. And then as I've already mentioned, we plan to do some testing within that development phase.

--o0o--

MS. DUNN: So when we think about developing

findings, this can be challenging, because the results of the studies are often complex. And the struggle is how do we bring in the nuances of what was done and what was found without making the statements confusing, and especially for non-scientists. And there also may be cases where different studies have had somewhat conflicting results. And so we have to find a way to also manage that kind of complexity.

So we would welcome your thoughts on that and other challenges that you might have in mind in terms of how do we take the scientific work and boil it down in a way that's going to be interesting and useful and accurate.

And we'd also be interested in your thoughts on any specific findings from your awareness of the work that's been done that you'd really -- what key findings you'd really like to make sure are in here, and if you have thoughts about how we would phrase any of those.

You may have noticed in the few examples that we have these icons. Right now, they're very simple icons. I'll have some examples on the next slide. They're basically little pictorials that show something is increasing, something is decreasing. If you have thoughts about what we should be aiming for with respect to these kind of icons. Like, how -- should we have just a few

that everything can be kind of categorized under or how -- how fine down -- fine detailed should we go with the pictorials.

And we're having this discussion today. We have, you know, a limited amount of time. We've also put into people's packets these little input forms. So if you have thoughts that you want to jot down, and just leave this for us today. And after today, and anyone on the web, we would welcome your thoughts through our email address.

So let's see.

--o0o--

MS. DUNN: So here's examples of the three icons that are currently in the draft feature. One that's, you know, something is going down, something is going up, and then the bottle denoting a poison. That's what that third one is meant to be.

And then these are examples of the findings statements that were in the background materials. So this is the kind of level of detail and length that we're going for in terms of these statements.

--o0o--

MS. DUNN: So that's it. And we -- I guess we have some more time for your thoughts on finding icons and statements.

CHAIRPERSON SCHWARZMAN: Carl.

PANEL MEMBER CRANOR: Just very quick. I think what you're trying to do is a great idea and any comments I made were just how to make it better, so keep up the good work.

(Laughter.)

PANEL MEMBER CRANOR: Thank you.

CHAIRPERSON SCHWARZMAN: Yeah. Jenny, Go ahead.

PANEL MEMBER QUINTANA: Just to -- I'm sure you've done this, but just to make sure you're planning for this to be mobile friendly, because I think that would be really important for most people

MS. DUNN: Great. Thank you.

CHAIRPERSON SCHWARZMAN: This can include -- it doesn't have to just be limited to the Panel. Any other -- any thoughts from people and other attendees?

I had a question. You mentioned sometimes there's complex situations in reporting results, like if results are conflicting. Do you have any examples off the top of your head, just so that we can see what kind of thing you're wrestling with?

MS. DUNN: Well, for example, some of the earlier studies with regard to PBDEs seem to indicate that the levels were sort of uniformly decreasing. But I think June-Soo mentioned it a little bit today earlier that actually some of the more recent findings show it leveling

off, and even certain PC -- no, PBDEs going up. So that's the kind of thing I'm talking about, where there's not necessarily a uniform finding.

CHAIRPERSON SCHWARZMAN: But those non-uniform findings still fit into a pretty coherent narrative --

MS. DUNN: True, in this case.

CHAIRPERSON SCHWARZMAN: -- it strikes me. So it's not like you can say all these three studies showed PCB -- PBDE exposures going down, but you can say taking these studies together, it looks like PBDE exposures decreased for a while and then have plateaued, and we may be seeing, you know, the rise in a few or some -- you know what I mean?

MS. DUNN: Um-hmm, yeah.

CHAIRPERSON SCHWARZMAN: Like I think what you already have on there are very cogent sort of syntheses of the findings. And I -- I guess I would encourage you to just figure out the story you can tell from all the findings without trying to force them into one super simple story.

MS. DUNN: Great. Thank you.

CHAIRPERSON SCHWARZMAN: Yeah, Carl.

PANEL MEMBER CRANOR: I would echo that. I thought Sara was very helpful earlier when she said this is a typical pattern for persistent substances. They go

down initially maybe as you get early exposures, and then you decrease them, but then they're in the environment and they come back to bite in other ways. And you can tell that story. Megan's point a perfectly coherent story that makes the studies consistent.

MS. DUNN: Yeah, I really like the idea of it being a story that we're telling. I think you're right, that's what we need to do.

CHAIRPERSON SCHWARZMAN: The other thing that occurred to me from some of the examples of your findings that this slide that shows the icons and then these findings statements would be potentially a little bit of interpretation. Like, you have higher levels of PBDE flame retardants. Like, that's helpful. That's interpretation for somebody who doesn't know what a PBDE is, but you have like benzophenone-3. Most people don't know where that comes from.

And so you may not be able to condense that into a statement, but maybe benzophenone-3 is clickable, and takes you to the information page about benzophenone-3, or something like that, that has information about sources, or whatever, you know, you have from your results return materials about potential health effects, or sources, or whatever other information people would want to know when benzophenone-3 doesn't like trigger any immediate

associations.

MS. DUNN: Yeah. We -- it's definitely the plan to be interconnecting with information like what you're referring to. And I think going back to what Dr. Cranor mentioned earlier about finding a way that people -- that we're actually serving it up in a way that people can -- not have to know what benzophenone-3 is. They can know, okay, this is personal-care product related, for example, if that was the case with this.

CHAIRPERSON SCHWARZMAN: Other -- yes, Mel.

PANEL MEMBER KAVANAUGH-LYNCH: Yes. Thank you. I don't really have anything new to say, except that I heartily agree with leveraging all the great work that's been done on the results return. So using those things that have already been developed to say, you know, where these things are, how you can decrease your exposure, that kind of thing.

MS. DUNN: Great. Thank you.

PANEL MEMBER SUÁREZ: Just a quick question about the -- in the regions' section, do we have studies in all regions or are the clickable ones only where the data is available.

MS. DUNN: Well, right now, there's not much data in a couple of the regions. We do have some studies. For example, the Teachers Study has participants in many

different regions throughout the state, but it's not just in one region. So I think we're going to have to think about how we get that across so that when someone clicks on a region, say the Northern California region, which goes from Marin all the way to the Oregon border and there's really -- currently, there's not much that -- of the studies that we've done. Although, the firefighters study that's currently being done is there, but -- you know, we are thinking about having placeholders that say The CARE Study is coming to your area in, you know, 2025.

(Laughter.)

MS. DUNN: You know,

MR. WEEREN: Stay tuned.

MS. DUNN: That's right.

But, I mean, if you have thoughts about how to deal with that, you know, for example, San Diego, currently also not a lot right now. So, you know, we don't want people to go there and be discouraged. So any thoughts you have about how we would message that would be appreciated.

PANEL MEMBER SUÁREZ: I think what you're saying is a way -- a good way to put it. So we have plans on doing a study at a certain point in time in that area. I don't think we can do much more, if there's nothing there yet.

CHAIRPERSON SCHWARZMAN: Can you add teachers to the list of people, since there's some dedicated studies?

MS. DUNN: Definitely.

CHAIRPERSON SCHWARZMAN: I mean, anything like that where you have a -- there is a dedicated study would be nice, like ACE, and Teachers Study, and stuff to pull that out on the front page. I think partly it's just like people who come in not knowing what to look for. If it's pulled out like that, it increases awareness of what there is.

MS. DUNN: Yes. Yes, definitely.

CHAIRPERSON SCHWARZMAN: Jenny.

PANEL MEMBER QUINTANA: Have you thought about a more simple thing to do than a video where you maybe have pictures of a study and they kind of scroll past the person that's looking at the screen, and it flips BEST, this, and it has pictures of that. And they kind of get an awareness --

MS. DUNN: I know what you mean.

PANEL MEMBER QUINTANA: -- of what's there by just watching this little loop. We kind of have that in some of our SDSU home pages. And it just gives you a feeling for what kind of studies there are, if you're just sitting there and they're staring at the screen. I don't know.

MR. WEEREN: So like feature findings or something like this, so that --

PANEL MEMBER QUINTANA: No. No, just literally like a picture of a teacher, a picture of firefighter --

MR. WEEREN: Oh.

PANEL MEMBER QUINTANA: -- a picture of a so-in-so, kind of just running in a little loop as they're deciding which population. So it kind of just gives you an idea of what choices there are visually, you know, without having to read the list.

CHAIRPERSON SCHWARZMAN: You asked for input on the icons. What is that poison icon meant to signify?

(Laughter.)

MS. DUNN: Well, so we didn't have too many findings actually already developed. But on the website currently one of the key findings that's currently on the website is about the elevated mercury levels in a participant from one of our earlier studies from skin cream. And it was in relation to the tainted skin Cream, yeah. So not that it would come up that often. Yeah, but just -- in a way, it was a concept of trying to distinguish something that was really -- it was really not a -- you know, something that was coming out of the means, it was like an individual. It was more like a case study.

PANEL MEMBER FIEHN: Yeah. I read it as buy

American, avoid foreign products. I mean, you know, you see what I'm saying. So it wasn't quite clear --

(Laughter.)

PANEL MEMBER FIEHN: -- that this is a single case. It's isolated. It was a specific product, at a specific time, I guess.

MS. DUNN: Yeah.

PANEL MEMBER FIEHN: So, you know -- and there are scientists and they have their scientific views. But most people are not scientists, and they need some recommendations what to do with that finding really, what to take from it.

You know, and it's hard, because often we don't know. You know, we simply don't -- I mean, we know that they're not acutely toxic, right? But there might be long-time harm, and there's certain other studies. And, you know, of course, mercury in skin cream is not good. That's easy. So I do understand the icon.

(Laughter.)

MS. DUNN: Good.

PANEL MEMBER FIEHN: But I didn't know from that -- from that one single sentence it was like, oh, oh my God, you know, buy American. I mean, that was my reaction. Buy American, right? I don't know.

MS. DUNN: It's one of the reasons it's so

important to do some testing before we go live, because just that kind of feedback that we might be blind to that someone coming in without, you know, our study knowledge will just say, wait, what is this -- and yeah, so.

CHAIRPERSON SCHWARZMAN: The only other thought that I had about icons is if you think about kind of sorting and resorting the data in lots of different ways, like, you know -- that you could mouse -- you could have a set of icons that's like children's findings, you know, metals, lots of different slices through the data. And you would have an icon for that and you could mouse over a study, and a certain subset of those icons would come up to show you which topics that study relates to. And you could probably do it in several different places in the website, not just about the studies.

But something like that if you're trying to sort of index the information along these different ways that people might want to access it, or, you know, you could mouse over it and it would show you which regions this study, you know, was conducted in, or whatever. It was like -- there's lots of different ways to slice the information, and you might have ways to just indicate it without having to click through, but that you could just mouse over and it would show you a range.

MS. DUNN: Um-hmm.

CHAIRPERSON SCHWARZMAN: Sara.

MS. HOOVER: I just wanted to make one quick clarification. That was one finding in our study but it's a very broad issue, and it's -- you know, it goes throughout California. We connected with FDA about it. It's a very well known problem the mercury in skin cream. And it is skin cream that is basically adulterated in other countries and brought over. So I understand the reaction to the statement, but I didn't want to leave it on record that it was a single isolated finding. It's a very broad concern.

CHAIRPERSON SCHWARZMAN: Any other feedback again about this?

Yes, Mel.

PANEL MEMBER KAVANAUGH-LYNCH: So I'm notoriously bad at icons. I can never figure out what any of them mean.

(Laughter.)

PANEL MEMBER KAVANAUGH-LYNCH: But I -- the ones with the arrows --

MS. DUNN: Yeah.

PANEL MEMBER KAVANAUGH-LYNCH: -- my mind went immediately -- so you said going down or going up. And I read it as low or high, so -- because I think most of our studies aren't over a period of time. They're just a

single measurement. So it's the same icon, two different interpretations.

MS. DUNN: Yes, the icons are surprisingly challenging. This is not the first set that we've -- you know, we've gone through feedback internally, and it's really hard to find an icon that everyone understands, and that seems relevant to the finding, but we're going to keep trying.

CHAIRPERSON SCHWARZMAN: I think we'll wrap-up this portion. Thank you so much for the work on this, and for showing it to us, and being open to our input.

We have a public comment period now, before we close. And I have one comment card. I just want to check and see if there's anything else from the web or in person. And I'll call on Davis Baltz.

MR. BALTZ: Hi. Davis Baltz. I'm a public educator and advocate On environmental issues.

Is that better?

Okay. First of all, a couple quick comments on Amy and Uli's presentation. To the degree that it's possible, if you could click through on demographic or occupational status, I think that would be very helpful, and would draw in people who wanted to see that information right off the bat.

A second one, which may not be possible, but

could you click through on a disease that might be implicated with exposure to certain a chemical?

It maybe, you know, beyond the mission of the Biomonitoring Program, but I know, for example, the Collaborative on Health and the Environment has a database where you can search by chemical, but you can also search by disease endpoint and find out what the strength of the evidence is for that particular chemical. So, for example, you could click on breast cancer, and all the breast cancer carcinogens would come up, including how strong the evidence is linking the disease to that chemical exposure.

On the icons, I think one way actually you could not exceed your mission as a State agency would be to have a icon that would denote a Prop 65 chemical. You could have a 65 with an R for reproductive toxicant or a C for carcinogen. And that might be another way to bring people in who were looking for something like that.

On the icon that was a straight up arrow or the straight down, as Mel mentioned, one way to maybe improve that would be to have a little X and Y axis with an arrow going up or an arrow going down. Maybe that would be more accessible for some people.

And then the last point on that is I think Meg mentioned this is how does the California data compare

with NHANES. And we've never been able to pull out NHANES data to look at what's happening specifically in California, and we know that that's important. And especially now with what's going on in Washington, the Biomonitoring Program is poised to provide data that may not be accessible or available too much longer or to the degree that it has been at the federal level.

And as California has stated through many public officials that we are going to stay the course, and resist some of the trends that are happening in Washington, the Biomonitoring Program is a good exemplar of that. So with the program 10 years old, I just want to commend Dr. Wu, Dr. She, and Sara Hoover for their leadership through the years on this program, and how very important it is.

And the budget is obviously the key hurdle that we need to overcome right now. And so I will do what I can in my small way, but I encourage everyone in the program and on the SGP, and public interest organizations to -- let's figure out ways to put our shoulder to the wheel and make sure this program not only survives, but increases its budget, so it provides the kind of information that California can demonstrate, that we are a national leader, in spite of what's happening in Washington.

CHAIRPERSON SCHWARZMAN: That's a nice note for

ending, but I would --

(Laughter.)

CHAIRPERSON SCHWARZMAN: -- say that we have another moment, if there's any other comments before we close?

And nothing on the web?

Nothing coming in from remote participants.

MS. KAUFFMAN: No.

CHAIRPERSON SCHWARZMAN: Anything else from the Panel?

Okay. So with that, I will adjourn the meeting. There will be a transcript posted on the Biomonitoring California website when it's available. And the next SGP meeting will take place August 22nd in Oakland or Richmond once the location is determined.

I want to thank everybody for their ongoing efforts with the Program and for contributions to today's meeting, and adjourn this meeting.

Thank you.

(Applause.)

(Thereupon the California Environmental Contaminant Biomonitoring Program, Scientific Guidance Panel meeting adjourned at 4:56 p.m.)

C E R T I F I C A T E O F R E P O R T E R

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 Contamination 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 9th day of March, 2018.

JAMES F. PETERS, CSR
Certified Shorthand Reporter
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