

MEETING
STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT
ENVIRONMENTAL CONTAMINANT BIOMONITORING PROGRAM
SCIENTIFIC GUIDANCE PANEL

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH
RICHMOND CAMPUS AUDITORIUM
850 MARINA BAY PARKWAY
RICHMOND, CALIFORNIA

THURSDAY, NOVEMBER 3, 2016
10:00 A.M.

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

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Oliver Fiehn, Ph.D.

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

Thomas McKone, Ph.D.

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

Megan R. Schwarzman, M.D., M.P.H.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY:

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OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT:

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Laurel Plummer, Ph.D., Staff Toxicologist, Safer Alternatives Assessment and Biomonitoring Section

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Robin Christensen, M.S., Biomonitoring California Grant
Coordinator, Sequoia Foundation

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

Nerissa Wu, Ph.D., Chief, Chemical Exposure Investigations
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DEPARTMENT OF TOXIC SUBSTANCES CONTROL:

June-Soo Park, Ph.D., Chief, Biomonitoring Branch

Myrto Petreas, Ph.D., Chief, Environmental Chemistry
Branch

Miaomiao Wang, Ph.D., Research Scientist IV, Biomonitoring
Branch

GUEST SPEAKERS:

Peggy Reynolds, Ph.D., Senior Research Scientist, Cancer
Prevention Institute of California

ALSO PRESENT:

Veena Singla, Ph.D., Natural Resources Defense Council

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1 P R O C E E D I N G S

2 DR. PLUMMER: All right. If everyone, could take
3 their seats, we're going to get started.

4 So I just want to put out some reminders
5 to people here in the room. We'll ask you to please speak
6 directly into the microphone, and introduce yourself
7 before speaking. And this is for the benefit of the
8 people listening via webinar, and also for our
9 transcriber.

10 The meeting materials were provided to SGP
11 Members and also posted on our Biomonitoring California
12 website. And we have some copies of presentations and
13 other meeting materials available at the entrance to the
14 auditorium, if you haven't grabbed one yet.

15 Today, we'll take a break around 12:35 for lunch
16 and another short break in the afternoon at 2:55. And you
17 can -- just some logistics. You can find the restrooms
18 and emergency exits to the back of the auditorium there.

19 And with that, I'd like to introduce Dr. Lauren
20 Zeise, Acting Director of the Office of Environmental
21 Health Hazard Assessment.

22 ACTING DIRECTOR ZEISE: Thank you, Laurel. Good
23 morning, everyone. I'd like to welcome everyone in the
24 audience, on the web or in the room, and the Panel to this
25 Scientific Guidance Panel meeting for the California

1 Environmental Contaminant Biomonitoring Program, which is
2 also known as Biomonitoring California.

3 So thank you all for your participation in this
4 important meeting. Just a reminder of the last meeting,
5 which was held in Richmond last July. At that meeting,
6 the Panel received Program updates and provided a good
7 deal of input on the Program. It discussed with Dr.
8 Benjamin Blount of the CDC his research for the National
9 Biomonitoring Program on tobacco biomarkers and
10 perchlorate.

11 The Panel also participated in a session on
12 pesticide exposures and biomonitoring. And this included
13 talks by Dr. Paul English of the California Department of
14 Public Health on agricultural pesticide mapping and
15 proximity of pesticide use to schools, and a talk by Dr.
16 Bradman on considerations in biomonitoring pesticides.

17 The Panel also provided possible input on
18 possible classes for future considerations for pesticides
19 as possible designated chemicals. The Panel indicated
20 interest in considering organophosphorus compounds used as
21 pesticides at the 2017 meeting -- at a 2017 meeting, and
22 also asked that the Program track neonicotinoids for
23 consideration at a later date.

24 So for information on the July meeting, we have
25 it posted on biomonitoring.ca.gov on the website. And it

1 includes transcripts, summary of Panel recommendations,
2 and input.

3 And with that, I'll turn the meeting over to Dr.
4 Bradman, Chair of the Scientific Guidance Panel.

5 CHAIRPERSON BRADMAN: Thank you, everyone and
6 everyone who's here today, so I'm going to just give a
7 brief introduction and overview to the meeting, as we do
8 with all meetings.

9 I just want to review the goals and then
10 procedures for public input and that sort of thing. So
11 our goals for the meeting today are actually pretty broad.
12 We want to receive a program update and provide input on
13 new activities being launched by the Program, including
14 the multi-regional study, community outreach and specific
15 environmental justice projects. Look forward to hearing
16 about all those things today.

17 We are going to be hearing an in-depth update on,
18 and provide input on, semi-targeted and untargeted suspect
19 chemical screening work underway at the Program
20 laboratories.

21 We're going to be discussing new findings from
22 the California Teachers Study, with our guest speaker Dr.
23 Reggy Reynolds of the Cancer Prevention Institute of
24 California. And we also want to get -- want to provide
25 input on 2 possible classes of chemicals used in UV

1 applicators.

2 We talked about that briefly last time, the
3 benzophenones and phenolic benzotriazoles for future
4 considerations as potential designated chemicals. We also
5 want to review and perhaps suggest some possible 2017
6 agenda topics for the Scientific Guidance Panel.

7 For each agenda topic, time will be provided for
8 clarifying questions, public comment, and Panel
9 discussion, and input. And, as usual, for public comment,
10 if you'd like to comment on an agenda item, please fill
11 out a comment card, which can be obtained from the table
12 near the entrance of the auditorium, turn the cards into
13 Amy Dunn. If you're joining the meeting via the webinar,
14 you can provide comments via email to
15 biomonitoring@oehha.ca.gov. And OEHHA is O-e-h-h-a.

16 Emailed comments relevant to the topic under
17 discussion will be read aloud during the meeting and
18 discussed. Public comments will be subject to time
19 limits. And, if needed, the time allotted will be divided
20 equally among all the individuals wishing to speak on that
21 agenda item. Please keep comments focused on the agenda
22 topics being presented. There will be an open public
23 comment period as the last item of the day.

24 So I want to now introduce Dr. Nerissa Wu, who
25 will be Chief of the Chemical Exposure and Investigations

1 Unit of the Environmental Health Investigations Branch of
2 CDPH. And she'll be introducing Dr. Reynolds and also
3 providing an update -- actually the introduction comes
4 later. Sorry. That's with Dr. Petreas.

5 So anyway, we look forward to your presentation
6 of the Program update.

7 (Thereupon an overhead presentation was
8 Presented as follows.)

9 DR. WU: Good morning. Okay how's that?

10 Excellent. This why we keep Robin around for the
11 turning on of microphones.

12 Good morning, everyone.

13 CHAIRPERSON BRADMAN: Dr. Wu, can I interrupt
14 just briefly?

15 DR. WU: Sure.

16 CHAIRPERSON BRADMAN: If you could tell us when
17 you switch slides, because we're going to be looking at
18 the slide this way rather than that way.

19 DR. WU: Oh, of course. Yeah. I feel like I'm
20 speaking right to you, since I'm like 3 feet from Dr.
21 Quintana here.

22 CHAIRPERSON BRADMAN: Thank you.

23 PANEL MEMBER MCKONE: We're all watching on our
24 computers.

25 DR. WU: Okay. Well, good morning and welcome

1 back to our Richmond campus. I am going to go through our
2 usual outline, giving you some Program news,
3 administrative updates. I'll talk about the current
4 projects that we have underway, and then I want to talk
5 about works in progress, the multi-regional sampling plan
6 in particular.

7 --o0o--

8 DR. WU: So budget updates. I'm sorry, change to
9 the first slide here.

10 As you know, our State funding is made up of our
11 core State budget. We also have some temporary
12 augmentations in the form of some 2-year temporary
13 positions that we are awarded through the budget change
14 proposal process every year. And we've been successful at
15 getting those over the past few years. And we have our \$1
16 million supplemental funding for this fiscal year for
17 focus on environmental justice projects.

18 And we also have our CDC funding, which is good
19 through 2019. The one thing that might change in the
20 short-term out of this picture, is that as far as I know,
21 there are not these temporary augmentations as part of the
22 2017-18 budget. What this means is that we do have some
23 temporary 2-year positions that will be expiring at the
24 end of the fiscal year in 2017, which means a decrease in
25 our budget and loss of staff.

1 Next slide.

2 --o0o--

3 DR. WU: We do have some staffing changes to
4 announce. Rob Voss and Lauren Joe were both
5 epidemiologists with CDPH. Both talented parts of this
6 program. You've seen them up presenting on different
7 projects. And we've just heard that Laurel Plummer, who
8 has contributed so much to this Program and is part of
9 making these SGP meetings run so smoothly, she will also
10 be moving on to another program. All 3 of these staff
11 have made huge contributions, and we will really miss
12 them.

13 There's other staff news, but I will let the labs
14 bear their own news to you. And we do have some good
15 news. We have Susannah McKay, who is back there. She's
16 joining us as a new epidemiologist at CDPH. She comes to
17 us with a background in molecular biology and
18 epidemiology. She loves data and she says she has a
19 passion for describing scientific findings to a public
20 audience. So we are very fortunate and very happy to have
21 her joining us. She's been here for 2 days, so she won't
22 be up here today, but we'll have her up here soon.

23 (Laughter.)

24 --o0o--

25 DR. WU: Now, I want to talk about some of the

1 non-English speaking audience. We do conduct the metals
2 analysis on a rolling basis, so that we don't delay any
3 identification of levels of concern. And we have had some
4 flagged mercury and arsenic levels that we'll be following
5 up on.

6 --o0o--

7 DR. WU: Next slide. The Foam Replacement
8 Environmental Exposure Study, or FREES. This is our
9 collaboration with UC Davis, for which they are collecting
10 dust samples. We're collecting biological samples to look
11 at the change in flame retardant levels over time. We
12 have gone into a participant's home to collect dust and
13 biological samples before they change out their furniture.
14 And then they make a change, either replacing or removing
15 a piece of foam furniture, which presumably contains flame
16 retardants. And then we track them at 6, 12, and 18
17 months to see how their levels change.

18 This is on track. We're continuing to collect
19 samples. We have had some changes in the participation.
20 Some people have been lost to follow-up, others have
21 decided they didn't want to change their furniture after
22 all. So we've had some changes, but we've been able to
23 recruit a few more people into this pool. So we actually
24 have an additional few participants.

25 What it means though is it's a little more

1 difficult to manage the participant pool. We have some
2 people who are going into their 12-month sampling round,
3 and others who have just joined the sample. So it is
4 elongated and just more administration. But everyone
5 serves as their own control, as their own comparison. And
6 so we'll still be able to look at the decrease over time
7 for each of those participants.

8 --o0o--

9 DR. WU: Next slide, onto Expanded BEST. The
10 last time we talked, we were at the point where we had
11 gone back to participants who had originally had an
12 elevated arsenic level. Fifteen of them had participated
13 in a retest and follow-up exposure survey. And of those,
14 5 again had an elevated arsenic result.

15 So we offered them a third round of retesting.
16 Four of the 5 have elected to take us on up that. And as
17 of this point, I believe we have 3 of those samples
18 in-house. And Duyen Kauffman has been reaching out to do
19 some more interviewing about potential exposure routes.
20 And we're expecting the 4th sample this week, so we should
21 be able to have some results soon.

22 --o0o--

23 DR. WU: Next slide looking ahead to our
24 environmental justice focus work. This is a work that has
25 been made possible by that supplemental environmental

1 justice funding. The priority in this is to determine
2 what our priority is to the communities, to find out what
3 are the issues that are concerning people, how are they
4 working to make their -- to improve their health through
5 environmental means.

6 We would like to conduct a series of listening
7 sessions to learn more about community priorities, but
8 also to communicate out what can biomonitoring do, and
9 what can't it do, what is the overlap between their
10 concerns and our abilities, and how can we serve the
11 population?

12 We've contracted with Impact Assessment. This is
13 a very short-term turn around, because it's one fiscal
14 year. And they will be starting to reach out to
15 stakeholders, and advocates, and other environmental
16 groups throughout the State.

17 Our deliverables from this, we hope we have a
18 database and robust information from these interviews on
19 what their priorities are. And part of the purpose of
20 this is so that we will start to develop relationships
21 around the State that could be turned into partnerships in
22 the future. If we're fortunate enough to have the funding
23 to go ahead and do some of these projects in the future,
24 we'll have already started down this road developing those
25 projects.

1 Next slide.

2 --o0o--

3 DR. WU: We also are using this funding to
4 implement some studies.

5 Good morning, Mhel.

6 You've heard about the ACE Study already in the
7 Chinese population. This funding is allowing us to expand
8 the population to include Vietnamese -- Vietnamese --
9 people of Vietnamese decent. We are partnering with the
10 Vietnamese Voluntary Foundation, which is a community
11 organization in San Jose.

12 They're very excited about the project, and they
13 have great community ties offering services, linguistic
14 assistance, and settlement assistance. This recruitment
15 is projected to begin in April. We also have a diesel
16 exposure project, which is in the works. We'll be
17 comparing exposures across neighborhoods and parent-child
18 pairs. And we'll be collecting in 2 different seasons, so
19 we'll be able to do some analyses of seasonal variability.
20 And that is also expected to start up in 2017.

21 --o0o--

22 DR. WU: So what all of these projects give us is
23 snapshots of California. We have a picture of different
24 populations and how exposures are affecting them. But
25 what it doesn't give us is a statewide -- a statewide --

1 an understanding of a statewide exposure. And I'm on the
2 slide now with the map of California and little pictures.

3 Obviously, statewide sampling is something that's
4 been a priority of the Program. It's part of our mandate.
5 I don't have to convince you of the benefits of doing a
6 statewide sample. The benefits would bring the Program
7 the ability to track temporal trends and identify exposure
8 hot spots, and derive some hypotheses, which then we could
9 follow-up. These are all great reasons to do a statewide
10 sample.

11 Next Slide.

12 --o0o--

13 DR. WU: But there are a number of challenges.
14 California is, of course, huge, which present some
15 logistical challenges. And we'd want to get sufficient
16 samples to represent across the many different populations
17 of California diversity, not only by demographics but by
18 the different types of exposures within our State.

19 Biology is really resource intensive. There's
20 collection of data, and collection of management of
21 samples. There's the very expensive chemical analysis,
22 and results return, and development of educational
23 materials. And the biggest challenge we've always had is
24 funding climate. We've never had sufficient funding, and
25 it's always been a very uncertain climate. So you don't

1 want to start down the road of preparing a sampling plan,
2 forming partnerships, and maybe collaborating, and
3 gathering samples when you don't know if you'll be able to
4 finish that project or return results in a timely way. So
5 it is something that we have not yet jumped into.

6 --o0o--

7 DR. WU: But lately, we have been looking at ways
8 that we could address this problem and more efficiently
9 gather samples.

10 And now, I'm on to the next slide, potential
11 approaches. We have looked both within the State and
12 outside of the State at some different tools that might
13 exist that we could use to try to gather a statewide
14 sample. We have talked to the California health interview
15 survey, and other Department of Public Health surveys,
16 like Nutrition and Obesity Prevention, and Tobacco Control
17 Branch.

18 These all have a statewide survey that we thought
19 maybe we could piggyback on this, add a question, and
20 bring people into a biomonitoring sample -- into a pool of
21 people that we could then contact and follow up for
22 biomonitoring.

23 And this is actually what the State of
24 Massachusetts does. Piggybacking on the Behavioral Risk
25 Factor Surveillance System, or the BRFSS survey, in

1 Massachusetts. They've attached a question, are you
2 interested in being contacted for this study on chemical
3 exposure? And the people who answer affirmatively, they
4 then contact them for biomonitoring. So that's one thing
5 we have explored.

6 Of course, we have our BEST project, which was a
7 surrogate for a statewide sample. And we've also used the
8 MAMAS project, the GDSP Biobank samples as a surrogate.
9 And that might have been our closest to a statewide sample
10 that we've had so far. So each one of these approaches
11 had a lot of merit. They each had something that would
12 lend itself positively towards biomonitoring, but there
13 are also attributes for each of these that weren't so
14 consistent with the kind of sample we wanted to draw.

15 So on the next slide --

16 --o0o--

17 DR. WU: -- what we've put together is the
18 multi-regional sampling plan, which is little bit of a
19 compromise between each of our concerns. What we're
20 proposing is that we divide California into 8 different
21 regions, and that we'll conduct sampling region by region
22 on a rotating basis collecting 300 to 500 samples per
23 region.

24 And ideally, if we were given adequate funding,
25 we would be able to cover 2 to 3 regions per year, and

1 thereby get a sample within 2 to 3 years of a sampling
2 cycle. That would be your statewide sample, and then we'd
3 go back to the beginning and continue this, so that we'd
4 have an ongoing statewide sample.

5 Without sufficient funding, we can still approach
6 each region, but we wouldn't be able to do them -- we
7 wouldn't be able to do enough of these within 1 year to
8 create our statewide sample. So we wouldn't be able to
9 have a temporal trend. We wouldn't be able to have an
10 overall picture of California.

11 But what we would have is an in-depth
12 understanding of each region. And what we'd have is the
13 ability to look at hot spots within that region and derive
14 hypotheses still on that regional basis.

15 Just as an aside, this regional approach is also
16 very consistent with new development for the website,
17 which you'll hear about next year, where the data will be
18 available in a more geographic form, so somebody going to
19 the website will be able to click on the map, and get
20 information about a certain region of California.

21 So if you identify as a Southern Californian, you
22 can click on that area, learn about the studies that have
23 been done in that area, and see maybe that the
24 multi-regional sampling plan is coming to your
25 neighborhood, and maybe that's something you want to learn

1 more about. So these 2 maps will be working in tandem to
2 bring that information to California.

3 Next slide.

4 --o0o--

5 DR. WU: This is just a breakdown of the
6 counties, how we've divided up the State. And this is
7 mostly based on geography, but also some perceived
8 exposure similarities between the different counties.

9 --o0o--

10 DR. WU: So how do we design sampling to
11 represent a region? We want to balance our desire to get
12 a representative sample across a population with also
13 these different community hot spots that we know about,
14 and we want to represent all of these parts of a region.

15 What we've thought of is conducting randomized
16 recruitment, based on mail routes. We'd select mail
17 routes throughout a region and send postcards to the
18 households within that region. This would be a
19 recruitment packet, sort of like what NHANES sends out to
20 the households.

21 And we know that the rate of return on these
22 postcards is fairly low. We know that from our experience
23 of BEST sending out letters. It's also not likely to be
24 uniform across populations. So what we'll do is we'll
25 supplement this randomized recruitment with community

1 still the largest by far. We are planning to biomonitor
2 for select metals - mercury, cadmium, arsenic and lead -
3 as well as the PFAS panel.

4 And we're in the planning phase right now. We
5 are trying to make our protocol as efficient as possible
6 in terms of getting the recruitment going, getting people
7 into the pre-screening pool, collecting the questionnaire
8 information, and then, of course, gathering all those
9 samples, which will be very labor intensive, and then, of
10 course, figuring out how to return results to all of these
11 people in a timely manner.

12 Our plan is to be in the field 2017 to '18, maybe
13 late 2017, beginning of 2018. Up ahead, we would really
14 like to add more panels, maybe additional chemical panels,
15 as well as looking at longitudinal work, or including
16 children in our population. But we want to get this
17 approach on the ground first, see how it works, and see if
18 we can move from region to region successfully.

19 --o0o--

20 DR. WU: And my last slide, I just want to close
21 by thanking our staff for all of their hard work. As I've
22 mentioned earlier, this is a transitional time for the
23 Program. We have had a lot of staff changes, and it is
24 one of the challenges we're facing right now, but we do
25 have an energetic and very talented staff still. And we

1 have some momentum on the projects I've described. So I
2 look forward to coming back next year and describing some
3 of our progress.

4 CHAIRPERSON BRADMAN: Thank you for that
5 presentation. Really a lot of work done and a lot of work
6 to do. So we have about 10 minutes now budgeted for Panel
7 questions, and then 10 minutes for public comments, and
8 then there will be some more time after that for a
9 discussion.

10 So right now, do we have any questions from the
11 Panel for Dr. Wu?

12 PANEL MEMBER MCKONE: Thank you.

13 Just second what Asa said. It's really
14 interesting. It's always exciting to see how much you can
15 do with a tight budget.

16 So the question I have relates to the
17 multi-regional approach. And, I mean, first of all --

18 PANEL MEMBER QUINTANA: Could you put the
19 microphone on? Sorry.

20 PANEL MEMBER MCKONE: Oh, I thought Asa had it
21 on.

22 Oh, you have to speak like right there. Okay. I
23 can't move my head.

24 So the multi-regional study, I think it's really
25 important. And I think most of us would agree that from

1 the onset, we really wanted to capture regional variation.
2 But in some sense, I also -- I think it's probably, you
3 know, from a scientific perspective and understanding our
4 populations, we're going to see more variability in
5 issues, such as urban versus suburban versus rural, ethnic
6 differences, income differences, the type of people --
7 houses people live in.

8 We're all really strong contributors to the
9 variations we would expect to see. I mean, we've learned
10 this from other kinds of studies. So I guess -- I mean,
11 the question is can we do the multi-regional study, which
12 again I think is important, both for the credibility and
13 for the people using this. They don't want to see all the
14 samples done in San Francisco and Los Angeles, right?

15 It really doesn't get a lot of -- I mean, they
16 go, well, it doesn't relate to me. Although, I think it
17 does. But I think the bigger question is, is to not lose
18 this very important -- very important other categories of
19 variability that we know about.

20 DR. WU: Yes. I think that's right. And I
21 think -- I mean, this is a challenge, because you have to
22 sacrifice something. And, you know, we want to do it all.
23 So in order to get that regional coverage, we are
24 sacrificing that granular detail within a region, which
25 might show us some of that variability by race, and by

1 urban/rural, or by whatever exposure.

2 So, I mean, the vision for the Program really is
3 to have this regional overview. And with our
4 environmental justice work, we'll be still identifying
5 those hot spots. And we're moving towards this better
6 understanding of the population as a whole. It's just --
7 it just takes a lot of time, and it takes, I think,
8 several rounds of this to really get that robust picture
9 that we all want.

10 CHAIRPERSON BRADMAN: Dr. Quintana.

11 PANEL MEMBER QUINTANA: Hi. Thank you for that
12 excellent presentation.

13 I guess my first question concerns following up
14 on your comments about differences. I've been thinking
15 for the last year in these meetings about what makes
16 California unique? You know, what is different about
17 California versus the entire NHANES program?

18 And one of it is, at least in San Diego where I
19 live, is the number of immigrant populations. And I don't
20 mean from Mexico and Central America only, but also, I
21 think we have the second largest Iraqi immigrant
22 population in San Diego, a very large Somali population.

23 And so I think that if efforts were not made to
24 fully include all persons, including those with languages,
25 other than English or Spanish, we might be missing

1 something again about what makes California unique, but
2 that's also very expensive, at least for our human
3 subjects board. We can't just translate them with our
4 Somali students, or whatever. We have to have a
5 professional translator for all of our documents.

6 And so I have a study going on right now where
7 every -- we've added Somali, and Arabic, and all kinds of
8 languages. And each one it adds significant expense, at
9 least for our budget, and a challenge for having research
10 assistants that can speak the appropriate language.

11 However, I think if we are not very inclusive,
12 and also conduct a lot of outreach with these populations,
13 I can't see them getting a postcard in English or Spanish
14 and returning it. It just -- they would just be gone at
15 that point, unless there was very targeted oversampling.
16 And I'm just curious how much you've thought about that
17 issue or how you plan to address it?

18 DR. WU: We have thought about that quite a bit.
19 And we face the same issues that you face, in terms of the
20 expense and the management of multiple languages.

21 So let me answer a couple stages. One is for the
22 multi-regional sample. That's one of the reasons we're
23 moving -- we have this hybrid of the randomized
24 recruitment. But you're right, if you get a postcard --
25 very few people answer those, in general, and it's not a

1 very good representation of the population, not only by
2 language, but just by who reads their mail and who will
3 return something like that, which is why we're
4 supplementing it with a community outreach. And we're
5 hoping that we get good representation across community
6 groups, so that we can funnel down our information into a
7 number of different communities.

8 The problem of interpretation is something that
9 we haven't been able to solve for the multi-regional
10 sample. Of course, we'll have information in Spanish, but
11 I don't know that we will be able to do interpretation and
12 translation to other languages. However, on the
13 environmental justice side, when we do our community
14 listening sessions, and are trying to elicit information
15 about what is concerning to communities, then we have the
16 ability to bring in translators for targeted groups. And
17 our hope is that that's where we'll learn more about those
18 particular communities.

19 PANEL MEMBER QUINTANA: Just a very quick
20 follow-up comment, and I think Asa might know something
21 about this, is that in the National Children's Study,
22 which was trying to be extremely representative, I believe
23 that they were allowed to not have to translate all the
24 materials, but they would just hire a translator for
25 whatever language it was for the visit to that person, and

1 then they were allowed to consent them and everything
2 verbally from a translator, because there were 79
3 languages in San Diego or something.

4 So just maybe look at those -- experience of the
5 National Children's Study and that issue might inform how
6 you might be able to do things. They video consents.
7 They have videos that were made ahead of time, you know,
8 in the languages. Anyway, it's just something that they
9 had to deal with too.

10 DR. WU: Yeah. Oh, that's good to know and we
11 will look into that.

12 PANEL MEMBER MCKONE: I have -- can I have a
13 follow-up on this also?

14 DR. WU: Sure.

15 PANEL MEMBER MCKONE: You know, my attitude
16 toward a postcard, if I got a postcard, I probably don't
17 even read it, because it looks like it's junk mail. And I
18 know this is problematic. I'm wondering if you've looked
19 into things like the neighborhood websites, which I
20 thought were silly until I -- you know, my wife starting
21 subscribing and then I subscribed to it. And like 90
22 percent of it is really stuff like, oh, does anybody have
23 extra boxes?

24 But people post -- and they're very personalized,
25 because there's -- you know, every neighborhood now has

1 their neighbor, or they're trying to, you know, there's a
2 service. And it's a great way to get into neighborhoods,
3 if you get a posting. And again, a lot of people won't
4 look at it, but you're going to get, I think, more
5 coverage or more response than a postcard, because it's
6 set up at such a small scale, right? It's really -- and
7 because it's neighborhood scale, it's actually probably
8 related to the language and the culture of the people in
9 that neighborhood.

10 I mean, some of these are done at like little 5
11 block radius scales. And again, they're very personal,
12 and very focused on that neighborhood. And if there's a
13 way to get access to that through somebody who can, you
14 know, put it out through the neighborhood network. I know
15 they protect -- they really protect these sorts of things
16 against advertising, so I don't know quite how one gets
17 into them.

18 DR. WU: Well, we have --

19 PANEL MEMBER QUINTANA: I had one last -- sorry.

20 DR. WU: Sorry.

21 We have spoken to -- well, I've reached out to
22 researchers who post on things like Berkeley Parent
23 Network to see what their experience has been, what kind
24 of population, and what kind of numbers do you get derived
25 from that kind of posting. And that's, of course, a very

1 particular population.

2 We have considered doing this, and we have also
3 thought about making the postcards a little more
4 configurable to a neighborhood. You know, we're looking
5 at the Brentwood neighborhood, come join us, to make it
6 seem a little more personal, a little more targeted. And
7 I think that will boost the likelihood of people answering
8 it.

9 Our hope is also that there will be advocacy
10 groups who blast us on Facebook, and then it gets shared
11 beyond them. And that's where people will then say, hey,
12 did you see this posted on their next door?

13 So we're hoping there is a little bit of a
14 snowball effect. And I think you're right, that the more
15 configurable we can make it, the more likely that people
16 will respond to it.

17 CHAIRPERSON BRADMAN: So Dr. Quintana, and then I
18 have a comment. And then we're -- we're actually a little
19 ahead of schedule, but we're using a little more time for
20 this period than we have. However, given that we have
21 extra time, we can extend it, but we will have also time
22 for public comment in a moment.

23 PANEL MEMBER QUINTANA: I have a follow-up
24 question, which -- what is the targeted ages of who you're
25 going to recruit? What is the age structure of your

1 population?

2 DR. WU: We are only recruiting adults at this
3 point, so over 18, and we'd like a distribution across 18
4 and up.

5 CHAIRPERSON BRADMAN: I want to make a comment,
6 and then I'll -- so my comment is related to some of the
7 earlier things about recruitment in the National
8 Children's Study, which I think that the National
9 Children's Study actually could be a good learning for us
10 in terms of thinking about this.

11 Remember at the beginning of the -- when we first
12 started the Panel, we were talking about the National
13 Children's Study as perhaps an opportunity to piggyback on
14 sampling and that sort of thing. And as probably almost
15 everyone in the room knows, the National Children's Study
16 failed completely.

17 And they used a community-based recruitment
18 procedure. And the enrollment was low, and it was too
19 expensive, and it was not effective. And during the
20 planning stages after spending tens and tens of millions
21 of dollars, probably hundreds of millions of dollars, at
22 the planning stages of the NCS, there was a big debate
23 about whether to do clinic-based recruitment, which is,
24 for example, what we did in Salinas, versus
25 community-based. And they went with the community-based,

1 because they felt it would get a more representative
2 sample. But the ultimate outcome was that it was
3 ineffective.

4 So I think maybe all of us and the Program should
5 kind of review what went wrong there and see how we can
6 avoid that, because some of what you just described
7 sounded to me a lot like some of the plans for enrollment
8 in the NCS.

9 Related to what Dr. Quintana just said, I have a
10 little project I'm doing right now, which is related to
11 contaminants in breast milk, and we did a survey. And we
12 actually used this approach where we reached out to
13 regional lactation groups, and we got connected with
14 people involved in blogs and networks.

15 And from just a few contacts, we suddenly had
16 10,000 people filling out our survey. And I think that it
17 potentially could be an effective approach, where it's not
18 clinic based, but it's kind of community based that's
19 targeted, and could obtain people.

20 But I think we should really look carefully at
21 what happened with the NCS, because that was -- I would
22 say that one is an epic fail in terms of public health
23 research in the U.S.

24 DR. WU: Yeah, point taken.

25 CHAIRPERSON BRADMAN: Dr. Schwarzman.

1 PANEL MEMBER SCHWARZMAN: Thanks so much. I just
2 had one question. I appreciate the presentation, and it's
3 an impressive array of activities that are going on. But
4 again on this topic of the regional survey, I sort of
5 heard 2 different things, and I was hoping you could take
6 a little bit more about it.

7 One is the limitations of the regional survey
8 that you said might not permit us to understand as much
9 about some of the sort of subregional variation. What Dr.
10 McKone was talking about, you know, rural versus urban and
11 different types of housing and that kind of thing. But
12 you also did mention that as the regional surveys are
13 staggered in time, there are still these benefits of
14 looking at one region before the entire State is covered
15 in terms of identifying hot spots, and other issues like
16 that.

17 So can you say a little bit more about what
18 granularity will be available and what won't, in terms of
19 the regional versus the statewide? And I'm sure it's
20 based on sample size and the amount of information that
21 you're collecting about participants, like the kind of
22 house they live in, and neighborhood, and that sort of
23 thing.

24 DR. WU: Right. So there are a number of things
25 we need to balance. Obviously, the number of participants

1 is somewhat limited. It's very much limited by the
2 resources we have available. Our ability to look at
3 different sectors of the population has a lot to do with
4 how successful we are with recruitment. And that's where
5 a lot of our emphasis is now trying to make sure that we
6 partner with organizations to drive a wide diversity of
7 people into our participant pool.

8 I can't remember what else I was going to say on
9 that.

10 But yeah, I mean, there is this -- we would like
11 to, at some point, be able to go back so we do one region,
12 we may derive some hypothesis based on the first pool of
13 participants we have, and then subsequent years, or if we
14 have additional funding through some other source, we can
15 then return to that region and examine some hypothesis
16 that we've been able to come up with, but -- and the
17 other -- oh, this is what I was going to say. Yes, of
18 course, we'd like to get information on all the different
19 exposures that we think might affect metals or PFAS
20 outcomes.

21 We do -- we are cognizant of the need to keep the
22 survey short though. I mean, I think particularly with
23 large numbers, we're not going to be able to do one-on-one
24 interviews with everyone, so we're looking at different
25 tools, which might be able to collect the data. I mean,

1 self-filled out questionnaires are not going to be as
2 clean data, but we need to balance any for that against
3 our need for efficiency in getting the data.

4 CHAIRPERSON BRADMAN: We'll take a break here
5 briefly from the Panel comments and questions and
6 discussion, and open it up for public comment. And I
7 wanted to remind everyone if you wanted to make public
8 comment to submit a request. We have one. If there's
9 anyone else, please do so. But at this point, so I'd like
10 to invite Veena Singla from the Natural Resources Defense
11 Council.

12 DR. SINGLA: Good morning. Thanks so much for
13 the presentation. And I wanted to comment on the chemical
14 panels for the first region that will be considered the
15 Los Angeles region. And while, as the Panel discussed,
16 this is not going to be a statewide representative sample.

17 I did want to suggest that there could still be
18 other panels that would provide useful comparisons to
19 national exposure trends, where we've seen disparities in
20 Californians' exposure, for example, with flame retardant
21 chemicals. In particular, we have seen higher exposures
22 in Californians overall for both polybrominated diphenyl
23 ether flame retardants, as well as now emerging research
24 suggests the same trends for the PBDE replacement flame
25 retardants.

1 And my other comment was that as the sampling
2 plan is developed for the L.A. region, in terms of hoping
3 to encompass a diversity of racial and socioeconomic
4 status demographics, to think about those differences in
5 order to decide what additional chemical panels may be
6 most useful or revealing. If there's been trends
7 previously and disproportionate exposure is seen in
8 certain racial groups or lower socioeconomic status
9 groups, like for the flame retardants or household
10 pesticides, those may be additional useful chemical panels
11 to add.

12 Thank you.

13 DR. WU: Those are good comments. Thank you,
14 Veena.

15 Yeah, we would love to include multiple panels,
16 additional panels to this work. And given resources, of
17 course, we would do that, either for the entire region or
18 for different subpopulations within that region.

19 We are -- we have selected metals, partly because
20 there is an acute health impact of metals, and because of
21 concern in California in certain populations for metals.
22 We think people will be very interested to get those
23 results.

24 And the PFASs, of course, there's been a lot of
25 talk about exposure through water and through different

1 exposure sources. So that, I think, will be very
2 interesting information to get. We'd love to have flame
3 retardant information, to compare to other states, but I
4 think again it's a tradeoff, where, I think, we're going
5 to focus on California and what is the difference across
6 the region. If we can collect that additional information
7 to then have more comparison to other states, that would
8 be great.

9 CHAIRPERSON BRADMAN: Any more public comments,
10 or any more emails or --

11 MS. DUNN: No emails.

12 CHAIRPERSON BRADMAN: Okay. So then we're back
13 then to some time allotted for Panel discussion. I just
14 want to also mention that the clock up on the wall is
15 significantly off. So if you're watching it for time, try
16 not to look at it. It keeps confusing me, even though I
17 have my phone right here.

18 So again, we have some time for discussion here.
19 And I'm just going to review one item that we heard a
20 little bit earlier about, the diesel study, that there's
21 going to be a follow-up with that. And I just want to --
22 before we begin that our general discussion today, I want
23 to let everyone know that OEHHA is working to establish an
24 interagency agreement with our group at Berkeley to
25 collaborate on the diesel exhaust -- to collaborate and

1 extend the diesel exhaust exposure study that we presented
2 as a pilot at our last meeting.

3 And this study will build on that pilot, and
4 we'll also be working with Chris Simpson at University of
5 Washington. And as you know, we found higher levels of
6 the metabolites -- 1-nitropyrene metabolites related to
7 diesel in children living in East Oakland in Alameda
8 County versus kids living in Salinas. And, of course,
9 there's much higher diesel traffic up here, and that was
10 consistent with the higher levels in the kids that we
11 sampled in that pilot study.

12 So I'm looking forward to trying to take that to
13 another level. And, of course, you'll be hearing about --
14 more about this study in the next couple of years.

15 So now we have some time for discussion, both in
16 relation to what Dr. Wu presented, and then we also have
17 some discussion items related to the environmental justice
18 projects and input from community organizations.

19 So Dr. Quintana, it looks like you have a
20 question immediately, and then I want to make sure though
21 we address the environmental justice questions too.

22 PANEL MEMBER QUINTANA: I guess I'm just
23 concerned about this population-based sampling approach,
24 because if it's not done right, it has no value. You
25 know, if you don't have the resources to -- because the

1 value of NHANES to the data nationally has been
2 extraordinary, due to the fact it's fairly representative.
3 So as it becomes less representative, it becomes less
4 useful, and maybe the resources are better spent targeting
5 certain environmental justice populations, rather than
6 trying to do one, if it's not enough resources, to do it.

7 Because as you said, it takes extraordinary
8 resources to do it right. And maybe we should revisit the
9 design in a way that if you're looking for hot spots,
10 which you keep saying, you can only find hot spots -- your
11 best chance of finding a hot spot, so to speak, is if
12 everyone is the same -- the same age, for example.

13 You know, if everyone is the same -- let's say
14 they're all 5-year old kids, you could find a hot spot
15 much easier than if one person is 60 and has a high
16 mercury, and then one person is 20 and doesn't, and -- you
17 know, there's all these things that vary besides -- in
18 their life besides their mercury level, you know.

19 DR. WU: Right.

20 PANEL MEMBER QUINTANA: And so I think that if
21 you're really looking for hot spots, to be honest, and
22 I'm -- this sounds like I'm criticizing, I'm sorry, but I
23 feel like the Scientific Guidance Panel is supposed to
24 give the picture.

25 DR. WU: No, it's really valid points.

1 PANEL MEMBER QUINTANA: You know, so, I mean, I
2 feel like if you really want to look for hot spots, which
3 you keep saying, we should maybe change to doing everyone
4 like all 5-year olds, or something like that, where you
5 could really try to eliminate other differences and look
6 for those clustering. And we had talked before about
7 using the alpha-fetoprotein 16-week banked samples, which
8 are about as good as representation of the State of
9 California as you could get in trying to use maybe
10 existing samples instead and doing surveys based on those.
11 And I'm just curious about how those efforts have gone
12 too.

13 DR. WU: Okay. Well, you've described the
14 tension in our Program between the community-based and
15 EJ-focused sampling and the statewide samples. And, I
16 mean, I try not to think of them as a dichotomy, because I
17 do really want them both driving towards the same goal,
18 which is to figure out what we all, as Californians, are
19 exposed to, regardless of what subpopulation you're part
20 of.

21 My hope is that we will sample broadly enough, so
22 that we will identify people. And I get your point that
23 you might miss people or identify something --
24 misrepresent something as a hot spot, just because it's a
25 different kind of population. But I don't want to limit

1 our recruitment across another strata like only looking at
2 one age group, because I don't know what our recruitment
3 success will be like.

4 I'm a little concerned starting with a smaller
5 pool than we have, and then not being able to recruit in
6 it, so -- but I understand the concern that you have
7 there.

8 Moving on to the MAMAS, I think we've talked
9 about this the last time. The MAMAS was -- it does cover
10 70 percent of pregnant women of California. So it is very
11 representative. But because the way the samples are
12 collected, and because there's a very small volume, and
13 it's only serum, there's a limit to what we could examine
14 in those samples. So we are continuing to -- and analyze
15 MAMAS samples. And there are certain uses I think that
16 will be helpful -- that they'll be helpful for, but I
17 don't know that we can use them for our overall statewide
18 sample.

19 CHAIRPERSON BRADMAN: Dr. Schwarzman.

20 PANEL MEMBER SCHWARZMAN: Thank you. I have a
21 question about the Foam Replacement Environmental Exposure
22 Study. And this is a fairly basic question, so forgive me
23 if I'm mixing this study with another one that I've heard
24 about. Do I remember correctly that this was targeting
25 low-income housing --

1 DR. WU: Um-hmm.

2 PANEL MEMBER SCHWARZMAN: -- and providing some
3 support for that replacement of furniture?

4 DR. WU: That is the right study. So we
5 recruited mostly around the Bay Area much, and then Green
6 Science Policy had additional funding to go into a San
7 Jose community housing project, and that funding was
8 available to -- for the residents to actually replace the
9 furniture. So it did support the purchasing of new
10 furniture.

11 We were only able to recruit a few participants
12 in that cohort. And so there's not going to be a great
13 comparison based on income. We -- they are part of our
14 sample pool though, and they will be getting their first
15 round of results. We won't be able to do much
16 statistically with it, but we'll have some anecdotal
17 information on that.

18 PANEL MEMBER SCHWARZMAN: So that was only the
19 focus in the San Jose cohort, not in -- or San Jose
20 recruitment, not anywhere -- not in the northern Bay Area.

21 DR. WU: That's right.

22 PANEL MEMBER SCHWARZMAN: Okay. I just think
23 it's so intriguing, and I -- to do an intervention study,
24 at the same time as an exposure study. And I'm sort of
25 curious to think about how the Program might think about

1 other interventional studies, because they're so
2 revealing, and that way that you talked about, about the
3 sort of issue of finding controls, is much simplified.
4 And they can be so revealing and so helpful for targeting
5 action.

6 DR. WU: Yeah. I do think the information from
7 the study will be very interesting. As far as design of
8 intervention studies, I have to say that choosing
9 something -- choosing a chemical panel for which there are
10 multiple chemical exposures, and an intervention that's
11 pretty intensive - replacing a sofa or furniture in your
12 home - it makes for a very difficult study to administer.
13 It's a little more easy -- it's a little easier to say
14 don't use this product for a week.

15 And so wrangling of the participants trying to,
16 you know, time when they're going to get their furniture,
17 making sure that they select furniture that doesn't have
18 flame retardants in it, and the timing of getting back
19 into their homes, it's very labor intensive, and it's one
20 of the reasons it's sort of a small-focused study.

21 But I hope that the information -- I hope at the
22 end of this we have information that really does it make a
23 difference, is changing out of the furniture really a
24 primary way to reduce your flame retardant exposure? And
25 the second part of this, it would be great to have some

1 information with those older sofas. If it's older sofas
2 that are the problem, then we really need to be concerned
3 about this environmental justice issue, and maybe we would
4 focus there in the future.

5 PANEL MEMBER SCHWARZMAN: One more question on
6 that study, if I may. Are you collecting other data about
7 potential -- or sort of survey data in partnership with
8 that about other potential exposure sources or other ways
9 that they try to reduce exposure to flame retardants?

10 DR. WU: Yes. We have a fairly lengthy
11 questionnaire for this study talking about occupation and
12 hobbies, any kind of other -- any other kind of home work
13 they might be doing in their lives, their diet. And at
14 each interval, we are asking if any of those things have
15 changed.

16 CHAIRPERSON BRADMAN: So we have an opportunity
17 now for both discussion, and clearly there's more
18 follow-up questions.

19 PANEL MEMBER MCKONE: Okay. You know, when you
20 showed the 8 regions of California, it seemed intuitively
21 correct, but I guess I was curious -- I mean, you know,
22 I'm look at the map, from what I know, I think they
23 capture certain characteristics. But how did you go from
24 50 counties to 8 regions? I mean was there a process
25 that...

1 DR. WU: Some of that was based on our assessment
2 of how many samples could we collect in a year, and how
3 many regions -- the logistics of setting up a region, and
4 the desire to get a statewide sample within 3 years. So
5 that's kind of how we came to the 8 regions.

6 When we started dividing up the counties into
7 regions, it had to do with just trying to balance the
8 number of residents, which is somewhat successful, though
9 there are obviously some regions that are super populated
10 compared to like the northern tier.

11 But we wanted to also think about some common
12 exposures that some counties would have, and also the
13 logistics of getting to counties like not having sampling
14 on both sides of the Sierras or something like that. So
15 it was an iterative process. And, you know, it's -- we're
16 starting with L.A., which is just that one county. So
17 there is still time to tinker with the other regions, if
18 you have suggestions about how we might better divide that
19 up.

20 CHAIRPERSON BRADMAN: Do you have more questions
21 about the study?

22 PANEL MEMBER QUINTANA: Go ahead. I have lots.

23 CHAIRPERSON BRADMAN: Well, I wanted to switch
24 gears a little bit and just -- you know, there is this --
25 there was a slide where you talked about environmental

1 justice projects and community outreach and identifying
2 environmental justice communities and outreach to groups.
3 And I know -- I think maybe some discussion here about,
4 you know, who else should we be talking to?

5 One thing I tend to feel about these meetings,
6 for example, we tend to be weighted towards Northern
7 California and the Bay Area. And there's some groups that
8 I think would be very interested, if we did a little more
9 engagement. Just actually yesterday and this week, I've
10 had some contact with, you know, West Oakland
11 Environmental Indicators Project, and Communities for a
12 Better Environment. And there's a lot of groups that are
13 very specifically interested in some of the things we're
14 measuring and some of the issues we're dealing with.

15 I think perhaps around implementation of the
16 Kettleman City, CalEPA settlement agreement are going to
17 be some opportunities to address environmental justice and
18 community concerns. And that might be a place to target
19 biomonitoring, or perhaps if there's work done in that
20 region to consider those communities, and that might help
21 direct the projects.

22 And I'd be interested in hearing both more from
23 people here, and also in other staff and communities about
24 what else we could be doing to do outreach and engagement
25 with -- with community groups and those representing, you

1 know, what we call, environmental justice communities or
2 really just communities in California.

3 Do you have any comments or also any comments
4 from the Panel on that?

5 Go ahead, Dr. Quintana.

6 PANEL MEMBER QUINTANA: This is related to both
7 the environmental justice question and the L.A. County
8 study design, because I guess following up on your
9 comments earlier, I think from a community point of
10 view -- and I work with environmental justice communities
11 in San Diego and in Imperial Valley, mostly U.S.-Mexico
12 border related, but also a little bit in San Bernardino
13 and up there. They are interested in urban rural
14 differences. There's a very strong interest and belief in
15 Imperial County about exposure to pesticides. And we
16 heard a very nice presentation in July about that.

17 And L.A. county does have some rural pieces, but
18 like Ventura has, you know, pesticide exposures in that
19 area. But it would be nice to see urban/rural really
20 incorporated in the first go-round, even if there's not
21 many to analyze the samples, but to collect and archive,
22 which is an extremely important part of your first round,
23 I would think, is to archive samples related to
24 communities.

25 And incorporating your comments, the more I work

1 with communities, and I came up -- started from a lab
2 scientist point of view, but I've been working -- because
3 we're the School of Public Health, and we work with the
4 communities. The communities want solutions. They don't
5 us to come in and say, oh, you guys are contaminated.
6 That's not what they want. They want to have it tied to
7 an action that you can do.

8 And so, for example, following up, let's say
9 we're looking at pesticide exposure. And one main route
10 might be air, but it also might be house dust. So to even
11 think about could we -- even on a subset of
12 participants -- collect dust or something in case
13 pesticides came up high, we found out it was in the dust,
14 because people understand they could reduce dust in their
15 homes. It provides an avenue of something you can do
16 about it, or even an intervention study.

17 And so I think if asking communities before you
18 start the project, what matters to you, might help inform
19 how you do it, I guess.

20 DR. WU: For sure. And I totally agree with the
21 urban/rural split. One of the things we've been doing
22 with Impact Assessment, who will be running these -- the
23 outreach is to think about the slices that we want to make
24 sure we include, and clearly across California, because we
25 have mostly a Bay Area presence, but the rural/urban as

1 well as across race and across other demographic markers
2 is really important. There are all sorts of water-related
3 issues in the eastern part of the State that we want to
4 include for sure.

5 In terms of environmental sampling, yeah, we
6 would love to have a subset of our population, have dust,
7 hand wipes, all the associated environmental samples that
8 would be so informative in terms of exposure sources.
9 Yes, we would love to.

10 CHAIRPERSON BRADMAN: So if I could just maybe
11 prompt a little more discussion on a couple issues. This
12 would be related both to your presentation and some of the
13 discussion we've had. We've talked a little bit about the
14 diesel exhaust project, and I think this also relates to
15 this multi-regional study.

16 Any thoughts from both Program and from the Panel
17 on the use of CalEnviroScreen? And, you know, I have felt
18 that that's really an opportunity there to really examine
19 public health issues in California and exposures in health
20 outcomes. And, you know, I just wanted to suggest that we
21 try to make use of that tool and how we can best use it.

22 DR. WU: Sure. That is definitely one of the
23 tools that impact assessment is using.

24 Oh, I'm sorry. Go ahead.

25 MS. HOOVER: Sorry. This is Sara Hoover.

1 Yeah, I just wanted to slightly redirect that
2 question a little bit, because, yeah, we are going to be
3 use CalEnviroScreen quite extensively. We're already --
4 in fact, Laurel is moving to the program, the same section
5 that does CalEnviroScreen, so we're hoping to have a more
6 integrated approach. So that's going to be a key tool in
7 terms of identifying highly exposed communities. We
8 haven't specifically talked about it for the
9 multi-regional study, but we're definitely using that tool
10 for the diesel study.

11 CHAIRPERSON BRADMAN: Exactly, yeah.

12 MR. HOOVER: But I --

13 DR. WU: And for the EJ outreach work to identify
14 community pockets.

15 MS. HOOVER: But I also just wanted to pose the
16 question more broadly, depending on who's in the audience,
17 just even anecdotally, experience of where is there high
18 diesel exposure in the Bay Area? The focus of the diesel
19 study will be in the Bay Area. Obviously, we're aware of
20 the Port of Oakland, but we just wanted to put it out
21 there to the public and the Panel just thoughts about
22 besides CalEnviroScreen, which is a great tool, are there
23 any other suggestions about identifying communities highly
24 exposed to diesel?

25 PANEL MEMBER SCHWARZMAN: 880 corridor.

1 MS. HOOVER: Yeah. So Dr. Schwarzman just
2 mentioned the corridors, and we're aware of that. And
3 that also will be picked up on CalEnviroScreen. You know,
4 and we've talked about areas in Richmond, but I just
5 wanted to put it out there, since we're in the design
6 study, if anyone has other thoughts about pockets, you
7 know, of concern.

8 PANEL MEMBER QUINTANA: As someone from Southern
9 California, can I ask why is it only the Bay Area instead
10 of say the U.S.-Mexico border with all the diesel trucks?

11 MS. HOOVER: It's strictly a resource issue. So
12 this particular piece of funding, as Asa just mentioned,
13 OEHHA is setting up that study. And the reason we're
14 setting up that study is because this one-time funding,
15 the EJ funding, arrived this year with a one-year time
16 limit on what to do with it. And it was split in a
17 particular way, not exactly the way that we had proposed
18 it to be split.

19 So OEHHA was actually given \$250,000. And we had
20 to come up with a practical approach for carrying out an
21 EJ study as quickly as possible. And I had consulted with
22 Asa, consulted with a number of our stakeholders
23 internally, and came up with this idea of the diesel
24 exhaust exposure. But just given strictly resources, we
25 need to base it, you know, locally where we are at this

1 moment.

2 However, it's got the same concept that Dr. Wu is
3 referring to, which is we see it as a first step. So we
4 see it as a -- kind of a modular study, the similar idea.
5 We carry it out here. Could we then take it to L.A.,
6 could we take it to the border, and do more with it? So
7 that -- and that will just be dependent on resources.

8 CHAIRPERSON BRADMAN: Dr. Quintana.

9 PANEL MEMBER QUINTANA: So, one issue that's an
10 environmental justice issue. I presume you're collecting
11 information on house characteristics and use of air
12 conditioning, open windows, because -- use of particle
13 cleaners. Again, ideally, if you had more money, being
14 able to clean up the air indoors would save particle --
15 portable particle cleaners might be a great addition, like
16 you were saying, to have an intervention and see if we can
17 actually do something about it. But I know funding is
18 limited and so is time.

19 CHAIRPERSON BRADMAN: Right. And this
20 particular -- again though, this particular study is in
21 the design phase. So any input, like you just mentioned,
22 is really helpful.

23 PANEL MEMBER QUINTANA: Even a pilot intervention
24 might be helpful to the community.

25 CHAIRPERSON BRADMAN: Sara, do you want to say

1 something?

2 MS. HOOVER: I just -- thank you. And yes, we
3 welcome all ideas. We have -- we have a lot of ideas in
4 terms of also consulting with local agencies and finding
5 ways to do environmental sampling, getting more money to
6 do small grants. Great idea to try to nest a small
7 intervention study in it.

8 So we have -- you know, we're looking at as wide
9 a possibility, in terms of collaboration and ability, with
10 the focus on, you know, conducting a legitimate study of
11 comparing a highly exposed community to a community that
12 is known to be less exposed to diesel exhaust. That's the
13 core.

14 PANEL MEMBER SCHWARZMAN: Feel free to just
15 dismiss this if it's 2 ideas that may not be relevant.
16 One is school bus exposure. So I don't know if there are
17 populations in the Bay Area that highly depend on school
18 buses. I know not all do, because the more urban areas
19 tend not to.

20 But I know that in the past sometimes that's been
21 a reason for high exposure in some groups. And then my
22 other thought was to investigate areas where there have
23 been a successful intervention about no idle rules. Some
24 ports I think have done that, and not all. And I don't
25 know how completely they've been implemented, and where.

1 But that's one thing that I would think to investigate a
2 bit is the existence of bans against idling, and whether
3 there are regional differences about exposures based on
4 those bans. I don't know if you have anything like high
5 enough numbers to try to look at that, but maybe even for
6 thoughts of future studies.

7 DR. WU: Do you have a response? I think that
8 was more addressed to you.

9 MS. HOOVER: Yeah, no, that's just -- yeah.
10 Thank you. Great idea. We're taking notes. We're
11 nodding our head, as Dr. Schwarzman speaks. And again,
12 you know, every -- anyone listening over the web can also
13 feel free to send us comments on the multi-regional study,
14 the recruitment plan, the environmental justice outreach.
15 We always accept comments, not just during the SGP
16 meetings. So we're always available to accept input on
17 all of our studies any time you want to send it to us.

18 PANEL MEMBER QUINTANA: Perhaps someone can
19 remember details about this, but I just saw an email --
20 was it last week or the week before? -- about a
21 settlement, State of California where they're going to put
22 in high efficiency filtration in schools. And I just
23 can't remember the location of that settlement. But that
24 might be an interesting before-and-after population. And
25 I just saw the email. It was maybe a week or 2 ago. Gina

1 is nodding her head.

2 CALEPA DEPUTY DIRECTOR SOLOMON: South Coast
3 AQMD.

4 PANEL MEMBER QUINTANA: That was an interesting
5 population. You may need to collect samples from before
6 and after, or something, you know.

7 PANEL MEMBER SCHWARZMAN: There's an intervention
8 you don't have to -- there's an intervention you don't
9 have to manage.

10 DR. WU: That's right.

11 (Laughter.)

12 DR. WU: If you have -- if you recall that email
13 in more detail, that would be great.

14 CALEPA DEPUTY DIRECTOR SOLOMON: (Nods head.)

15 MS. HOOVER: I think that Gina Solomon in the
16 audience just said that was in the South Coast Air
17 District.

18 DR. WU: Okay.

19 MS. HOOVER: Can I switch gears and throw another
20 question out there?

21 CHAIRPERSON BRADMAN: Sure. Yeah, we have a few
22 more minutes.

23 MS. HOOVER: One of -- so Dr. Wu was talking
24 about all these different plans for listening sessions,
25 and outreach, and trying to draw input from communities

1 across the State. But one piece of that that we're
2 planning is a newsletter, so a new Program newsletter, but
3 aimed not at the technical audience, but at the community
4 audience. And we've been bouncing around ideas about, you
5 know, what kinds of topics we might consider covering.
6 But I'd like to open that up to both the Panel and also
7 the listening audience about ideas about what people would
8 like to hear about from the Program on a -- on not the
9 level, like a Scientific Guidance Panel level, but on a
10 more accessible level, I guess I would say.

11 CHAIRPERSON BRADMAN: Go ahead, Dr. McKone.

12 PANEL MEMBER MCKONE: I'm not in the world of the
13 modern Internet but I have a son who works for CBS. I'm
14 just amazed at how news is distributed now, not the old
15 way. It's all done through social media.

16 And do you have a Facebook page? And like -- and
17 the reason there's an advantage to that, if you have a
18 newsletter, and you're on Facebook, somebody reads it and
19 goes click, you know, and then it goes to thousands of
20 their friends. You know, it's like oh a newsletter.

21 And, I mean, it's a really powerful way. I
22 didn't really understand this, until it was explained to
23 me by somebody younger, how this world works. And, you
24 know, if you don't have -- you can send out a newsletter
25 and it can sit somewhere or be posted on your website.

1 But if you have a Facebook site, you have a newsletter
2 there, it's very powerful, because people can click it,
3 and then it can just end up amplifying, or not, depending
4 upon if -- you know, somebody has got to be interested in
5 it.

6 (Laughter.)

7 PANEL MEMBER MCKONE: It just takes a small
8 number of people to click on it and then it gets -- starts
9 going out all over the place.

10 DR. WU: We do want to distribute our newsletter
11 through various means, because obviously Facebook will
12 address one population, but leave out others. So we want
13 to use a real range of media. Our hope is that we post it
14 on the website -- and we are somewhat restricted in what
15 we can put out on media ourselves, but that a newsletter
16 that can be shared through PSR or through other advocacy
17 groups can then be shared. You need to get into that
18 stream of sharing and then -- and that's when your
19 broadcasting really becomes larger, but that is something
20 we are thinking about.

21 CHAIRPERSON BRADMAN: I also think again getting
22 back to my comment earlier about representation that, you
23 know, we should probably spend some time just getting on
24 the phone and making some cold calls to community groups
25 that may be interested, and not just community groups, but

1 other stakeholders.

2 I had a round of calls yesterday with groups in
3 the East Bay that are interested in diesel issues. When
4 we were developing the National Children's Study in Kern
5 County, which fell apart because of the larger problems,
6 you know, we were able to develop some real dedicated
7 people and groups in that project, because we were
8 addressing environmental issues.

9 And they were not your typical environmental
10 justice group. They were neighborhood clinics, and local
11 medical providers. There was a whole cross-section. And
12 I think there's a constituency out here for this Program
13 that we're not reaching. Typically, at these meetings
14 there's -- you know, there's -- over the years, there's
15 been typically 2 or 3, you know, nonprofit advocacy groups
16 that are represented here.

17 And I think we can broaden that. And I think
18 just literally getting on the phone and trying to reach
19 out to people that you wouldn't normally expect. There's
20 also groups like unions. Certainly, United Farm Workers
21 and other unions who are interested in exposure issues.

22 There's also, you know, industry groups. And
23 certainly -- usually, we tend to see them when there's a,
24 you know, specific issue related to their interests. But
25 I think there's a whole broader community out there of

1 people who are potentially interested in this program, and
2 that we should get them involved, or at least invite them
3 more directly than the mechanisms we're using now.

4 DR. WU: Yeah, I think you're absolutely right.
5 And we're hoping to cast our net wide. And, you know, we
6 have this problem of broad coverage or really deep
7 coverage, and with one year and limited resources, which
8 we keep coming back to, I apologize, but that is a reality
9 of what we're looking at. But I think this is a first
10 step. We keep saying "pilot".

11 CHAIRPERSON BRADMAN: Exactly.

12 DR. WU: You know, we make these introductions,
13 we start forming these partnerships, getting on the phone
14 with people. You're right, that personal contact is so
15 key. And you're -- this is -- these are issues that
16 affect everybody. And so it is our job to get our word
17 out there.

18 And I think by making our media broader by having
19 a newsletter in addition to the website and the other
20 excellent work that OEHHA does to get our name out there.
21 This newsletter will reach yet another audience.

22 CHAIRPERSON BRADMAN: Dr. Quintana.

23 PANEL MEMBER QUINTANA: I think there's no
24 substitute for someone going in person to a meeting and
25 explaining stuff to people in the community. At least the

1 communities I work with, it's not calls or emails or
2 logging onto a webinar in English for 5 hours or -- you
3 know, it's just not going to happen.

4 But you have to go there and it costs money, you
5 know, from the State to travel, and send people, and send
6 people with language skills. But I think there's -- if
7 you really want to reach communities, you have to travel,
8 you know. And I'm just thinking of maybe having a module
9 that any time anyone from the State goes to some
10 environmental justice meeting, for example, they went --
11 all the hearings around the Exide lead thing in L.A.
12 There's all these State people that went there from OEHHA
13 and from the Department of Toxic Substances.

14 You know, maybe having someone either take or --
15 some materials that have a little table or something, you
16 know -- or a meeting that we were at in Imperial Valley in
17 the Environmental Justice Summit meeting -- Environmental
18 Leadership meeting -- always have a little thing for
19 California Biomonitoring with language appropriate
20 materials, because there's always -- there's stuff going
21 on. We're just not plugged into it, I think, you know.

22 MS. HOOVER: Can I just make a quick comment on
23 that? It's funny, I was just about to mention this other
24 idea that we have discussed internally and, that was
25 proposed to us by the L.A. Chapter of the Physicians for

1 Social Responsibility, which is to develop little
2 trainings and do exactly that, so -- but on a community --
3 community-based level, so describing -- so some of the
4 topics that Nerissa was mentioning about saying what
5 Biomonitoring can and can't do, they were really excited
6 about the idea of us actually coming down, you know,
7 having meetings hosted by them where we would do some of
8 that work. So that's something we're discussing,
9 definitely.

10 And we've had some -- I've had some experience
11 with that in the past about targeting particular
12 audiences. And we have, you know, hoping to broaden our
13 health education, staffing, and start tackling some of
14 that work.

15 DR. WU: And we do have plans to be on the
16 ground. I didn't mean to imply that we'd only be making
17 phone calls. Because we're working with Impact
18 Assessment, they have a little greater ability to get out
19 into the field, and they have extensive experience with
20 community facilitation. So there will be on-the-ground
21 meetings as well.

22 PANEL MEMBER QUINTANA: I meant in the context of
23 promoting the whole program, rather than their specific
24 recruitment.

25 DR. WU: Yeah, absolutely.

1 CHAIRPERSON BRADMAN: So we're about out of time.
2 We've used up our extra time at this point. So thank you
3 so much for your presentation and discussion. We're going
4 to move on to the next agenda item, which is laboratory
5 updates. And I wanted to introduce -- we're going to have
6 Dr. Jianwen She from the -- Chief of the Biochemistry
7 Section in the Environmental Health Laboratory Branch in
8 CDPH. And also after that, Dr. June-Soo Park, Chief of
9 the Biomonitoring Branch in the Environmental Chemistry
10 Laboratory from DTSC will also be providing an update.

11 So, Dr. She, we look forward to your
12 presentation.

13 Thank you.

14 (Thereupon an overhead presentation was
15 Presented as follows.)

16 DR. SHE: Thanks, Dr. Bradman for the
17 introduction. Good morning, Panel members and audience.
18 Today, I will provide an update for Environmental Health
19 Laboratory in last 6 months. Laboratory skipped the
20 update in July.

21 So next slide.

22 --o0o--

23 MS. CHRISTENSEN: Jianwen, you have the clicker.

24 PANEL MEMBER MCKONE: It's good to say next
25 slide.

1 DR. SHE: Oh. Thank you.

2 So my update will include staff change, method
3 updates, ongoing projects, recent publications, and future
4 work.

5 --o0o--

6 DR. SHE: I'd like to use this opportunity to
7 welcome Dr. Rosario Amado-Sierra, Dr. Shizhong Wang, Mr.
8 Li Fang, to job available in one of the programs. And Dr.
9 Rosario is -- I think, if you are in the audience, please
10 stand up, so people can -- Okay. Dr. Rosario. And I
11 think Li maybe -- Li, are you in the audience?

12 Oh, he's there.

13 And Shizhong is busy in the labs.

14 (Laughter.)

15 DR. SHE: Dr. Rosario is funded by the
16 Association Public Health Laboratory. Mr. Li Fang is a
17 visiting scholar from Zhoushan, CDC, from China. As you
18 all were aware, Biomonitoring Program have funding issues.
19 We try to use other opportunity, other small contribution
20 to the staff. So we apply for the grant to invite
21 visiting scholars.

22 And Rosario is funded to do the unknown
23 screening, or we call the semi-targeted analysis. He
24 responded to our application. And Li Fang has come here
25 to help us develop some new methods, also get some

1 training. Shizhong Wang continues to work on the PAH
2 method. We hope we can, in the future, develop it into a
3 diesel biomarker method.

4 And we have vacancies - a sample manager. And
5 actually, I heard from Robin the positions are already
6 offered. This CDC-funded position.

7 --o0o--

8 DR. SHE: For the method update, I like to focus
9 on arsenic speciation, semi-targeted analysis, and
10 development of master method.

11 --o0o--

12 DR. SHE: We are working on many methods as
13 improvement or expansion of combination. Arsenic
14 speciation is one of the methods I use as example here,
15 which is a targeted method.

16 Why we do it? One part is because we lost the
17 previous staff. We need to train the new staff, but also
18 there is transition period we look for. Okay. What's the
19 problem we maybe have with the previous method? So if you
20 can see the previous method detection frequency for the
21 arsenic V is 0 percent.

22 So we said, okay, for arsenic -- to redevelop
23 this method, we may need to make some improvement, which
24 requires the detection limit improvement. So that with a
25 new method developed by Dr. Key-young Cho. He's able to

1 improve, especially arsenic V detection limit from 1 to
2 0.02, which is about a 40 times improvement. We hope for
3 the future study, we can improve our detection frequency
4 for the arsenic V.

5 And other method we are working on I'll just
6 briefly talk about. We have a PAH method needed to
7 restore. So far we are successful. We're still working
8 on perchlorate method, and a few other methods. I hope I
9 can update at next meeting.

10 --o0o--

11 DR. SHE: So this -- with this improvement, we
12 like to see the improvement on the detection frequency, as
13 I mentioned before.

14 --o0o--

15 DR. SHE: And for semi-targeted analysis -- so we
16 can call semi-untargeted or unknown screening. Many
17 names, terms was used. Why I chose semi-targeted, I
18 believe that's -- it's easy for laboratory management.
19 And semi-targeted means we may have a library, at least
20 that we can reference for. It's not purely unknown. All
21 we know the parent compounds. So this is kind of in
22 between a fully untargeted and the targeted analysis. So
23 we use the term of "semi-targeted analysis".

24 We use a compound -- sorry. Benzophenone group
25 chemicals are the model chemicals to start with, because

1 we're already working on BP-3. We know something about
2 the chemicals. And our approach now is from a mathematic
3 point of view. Consider all of the combination, looking
4 for the metabolite of benzophenones with this kind of
5 substitution groups - 5-hydroxy, methyl, methoxyl,
6 chlorine, and sulfur. As a substitution group
7 exhaustively how many possible combinations there. We
8 turn out with 72. And then we said, okay, let's target
9 this 72. So that's our approach.

10 --o0o--

11 DR. SHE: We have a whole exhaustive list
12 combination on the left side. I called a compound name.
13 That's a wrong title. It is all possible combinations.
14 And then we use the mass spectrometer tools to lead us to
15 see what we found out.

16 So just -- this slide shows our approach, and
17 this is exhaustive list. This corresponding compound you
18 know -- may be familiar with the names -- and the chemical
19 formulations exact mass is base structure of this
20 compound.

21 --o0o--

22 DR. SHE: With this new approach, we found some
23 chemicals beyond what we previous targeted. For example,
24 we targeted BP-3. Now, we know BP-1 may be there. BP-4
25 may be there. BP-6 may be there. BP-8 may be there.

1 There's another one trihydroxy-BP may be there. Six out
2 of 6, because we do replicate analysis. We do 6 urine
3 sample analysis. We only look for what we have cutoff.

4 This chemical for us to say we found it must be
5 above 13, 3-fold on the response. And also how many
6 samples hit -- 6 of 6 samples hit. Also excluded some
7 found in the blank samples.

8 So on the last column of this slide, you can see,
9 okay, we found it. And we also confirmed what we mean --
10 confirm by the standard to look for them. So some were
11 founded. We need to confirm them. Some -- also, some of
12 them we know is a combination found, but we do not know
13 the chemical structure, so we call it unknown founded.
14 Still needed to be confirmed. We found a lot.

15 So from this 72 combination, you can see that's a
16 lot of work to do. So our approach, that's -- again,
17 elucidate why we take this approach instead of saying,
18 okay, look for all of the chemistry domain to find
19 something. So this is a proof of concept if we can make
20 some success.

21 --o0o--

22 DR. SHE: And this is a guess for a little bit
23 more technically -- I mentioned like confirmation with
24 mass spectrometer tools. For example, we said we find
25 that hydroxy BPs and that which the compound at the bottom

1 of this slide. That's a spectrum of it.

2 So we found commercially there are 2 chemicals
3 available. We run a spectrum. We turn out. It matched
4 with top 1. And that's the one we called we confirmed it.
5 So we -- of course, we have other criteria, like retention
6 times, exact mass, isotope profile, and to help -- to
7 support our confirmation.

8 --o0o--

9 DR. SHE: And so now I talk about the target
10 analysis, and the semi-target analysis. And then I
11 switched master method. Why laboratory develop so
12 different paradigms. I think that here that each method
13 try to address certain questions.

14 For example, the targeted analysis we can report
15 results back to the participant. But the semi-targeted
16 analysis play a major role for identifying new biomarkers.
17 May help identify what's unique for California
18 biomonitoring, what's emerging chemicals. But we will
19 play a less role for results return.

20 That's a transition, and that method will be
21 continued. So that's what -- be further quantitative --
22 supported by quantified method to do the quantified result
23 return. So this master method have developed one part to
24 follow-up this untargeted analysis. Also, on the other
25 hand, like Veena does comment consider about -- okay,

1 California have limited resource, how you consider
2 multiple panels? The study design we are not able to
3 analyze individual panel of chemicals, but can we combine
4 all of the chemicals into one comprehensive panels? So
5 that use the same kind of resource, can we do more --
6 support multiple panel analysis?

7 So at this moment, we combined 3 individual
8 panels together, which include environmental phenols about
9 10 compounds, and new BP groups, and phthalate
10 metabolites. So on the right column you can see our
11 detection limit actually very well on the standard levels.
12 We still try to work on the urines. But based on this
13 initial primary test on the limit of detection, we see
14 some promising future about this method, because it
15 matched our current individual method.

16 So, of course, like every tool, in our toolbox,
17 have its limitation. I think a targeted analysis like
18 beam of laser. This kind of like a Swiss Army Knife. And
19 then untargeted analysis, like the bigger -- how you call
20 it? -- detective tools. And then each of them have its
21 benefit, at the same time have its disadvantage.

22 --o0o--

23 DR. SHE: For the -- this is a continuation of
24 the master method for 3 panels I already talked about,
25 that we look for the detection limit, we look for the

1 dynamic range, we look for calibration curve. They are
2 all satisfactory.

3 --o0o--

4 DR. SHE: I skip over these things.

5 And next part of my update is include what we
6 have done to support ongoing project. And so far, we're
7 still working on FOX samples analysis with current method,
8 and with enhanced BEST sample analysis, PETALS study, and
9 ACE analysis. So next few slides show where we are.

10 --o0o--

11 DR. SHE: For the FOX study, and we look for the
12 OP flame retardants for 3 of the chemicals. BCEP, and we
13 work on 83 samples. We finish analysis. We ready to
14 report the result.

15 For the Enhanced BEST analysis, we did --
16 actually, we improved the method, but we have some
17 difficulty. Our machine is broke down. We will repair
18 it. So we hope -- the method actually looks better. So
19 we almost there to analyze these 218 samples.

20 --o0o--

21 DR. SHE: For the PETALS study, which is
22 collaborated with Kaiser hospitals, we promise to analyze
23 1,800 samples. So far, we've almost finished 500. Data
24 is already reported. And I hope we -- in the future, we
25 have a chance to invite Kaiser to talk, if they have

1 someone stage the results to share with us.

2 --o0o--

3 DR. SHE: For new study, ACE Study, and -- on the
4 right column is our status and how many samples we
5 analyzed. I will not read this details. You can see from
6 the slide yourself, if you want to know data.

7 --o0o--

8 DR. SHE: In -- this slide summarize the
9 laboratory's lead publications. And you can see it
10 covered a wide range. For example, the first one is a
11 review invited. And the next one is method of
12 development, and some toxicity studies, collaboration with
13 Professor Bin Zhao on the Dechlorane 602 and with the UC
14 Berkeley on HERMOSA studies. And also the -- our visiting
15 scholar published on other new studies.

16 Last study is a project study on the FOX samples.
17 I want to talk a little bit about the second-to-last study
18 is unknown identification method we published, which used
19 a different approach than I presented.

20 This study used the approach combine the possible
21 metabolite pathway with MS2. So we are very successfully
22 identified some fluoride compound as a metabolite in that.
23 So my presentation on the unknowns is a continuation of
24 our previous work.

25 --o0o--

1 DR. SHE: In many areas, we still keep working on
2 it. Here are the examples. We show 3 parts. And so we
3 need to retest some arsenic speciation for E-BEST with
4 improved arsenic speciation method. We still have almost
5 1,300 samples to do with PETALS study.

6 And as I mentioned before, as biomonitoring
7 grant, some kind of -- not big enough to conduct many
8 studies. Cotinine is on -- we heard SGP Panel in the past
9 ask us to do the cotinine. Without the resource, we
10 cannot do it. But fortunately, from position 99 fund us
11 with \$200,000. We split with e-cigarette. We get 125 K
12 to develop a cotinine method. So that's responded to the
13 requirement from the SGP panels.

14 --o0o--

15 DR. SHE: And for this cotinine method, I just
16 have one slide to show, which metrics we work on, which
17 analyte we may work on to ask advice from Panel. So as
18 you know, cotinine is a biomarker of nicotine. Nicotine
19 has a very short life. And so for the cotinine have
20 relative longer time, and also a lot of metabolites of
21 cotinine trans-3'-hydroxycotinine, also found in the serum
22 samples.

23 And we pick up these 2 analytes in the serum,
24 because the CDC have a method in serum. But, of course
25 CDC have a method in the urine, which cover much wider

1 spectrum of cotinine metabolite at this moment, because
2 one-time fund have time limit. Give us one year. We
3 decide and say, okay, let's analyze only these 2 analytes
4 in serum.

5 Thank you.

6 CHAIRPERSON BRADMAN: Thank you for that
7 presentation. We have a few minutes right now budgeted
8 for any questions from the Panel, and then we'll have some
9 opportunity here -- an opportunity here about the work at
10 DTSC.

11 Dr. Fiehn.

12 PANEL MEMBER FIEHN: Thank you Jianwen She. That
13 was a great introduction into your strategies and progress
14 you've made so far.

15 Can you please explain why you chose
16 benzophenones as first, you know, type of compound to
17 target? I mean, there's many ways we could target things,
18 and why those?

19 DR. SHE: We pick up BP-3s, and then one part of
20 them, for example, enhanced program monitor BP-3. But I
21 heard from last year's meeting in the Riverside presented
22 by New York program that said, okay, why you only monitor
23 for BP-3? We found BP-1 is there. And then, at the same
24 time, he -- Dr. Kannan he said okay. BP-1 may be also at
25 a significant amount of compound.

1 And he also said, okay, you reported parabens.
2 Parabens have a lot of metabolites. So his words, his
3 discussion with me said, okay, you may miss something on
4 the exposure levels or underestimate it. You will relate
5 the sunscreen chemical exposure, if you only monitor the
6 BP-3. So that's one part of the reason.

7 Second part, we also discuss with colleagues in
8 OEHHA and at -- within the Program under I think the
9 literature search by Dr. Laurel Plummer and others. And
10 they also think about how we do a class of chemicals. We
11 look at the BP group, the base structure, is fixed with
12 the substitution group connected to the manageable
13 isomers.

14 And we can pick up different chemicals, for
15 example, like polyhalogenated dioxin, which
16 polyhalogenated -- but which you have possible 3,000
17 isomers. And so that combination is the technical part
18 combined with the program need, and that's considered.

19 PANEL MEMBER FIEHN: So what would be the next
20 class of compound you look at?

21 DR. SHE: That's a good question. We may need to
22 discuss with you on that part too.

23 (Laughter.)

24 DR. SHE: If you have any suggestion -- this is
25 a -- a proof of concept, but that's really a good

1 question. We think next group of chemicals, and we also
2 say -- think, okay, can we combine the class together. So
3 we start with one class, parallel class, combination of
4 class. That's what we think.

5 If you have -- I haven't thought about it. Sorry
6 about that.

7 PANEL MEMBER FIEHN: Well, we have -- we discuss
8 every time classes of compounds we are interested in. We
9 nominate those. And obviously, it would be a wise choice
10 to look at those, right?

11 DR. SHE: Yeah, maybe --

12 PANEL MEMBER FIEHN: I think that's maybe why we
13 discuss those.

14 DR. SHE: Yeah, maybe Panel give us some, you
15 know, suggestion. Actually, now we get with that initial
16 success, we think it's a good way to look at.

17 PANEL MEMBER FIEHN: In terms of your targeted
18 master lists, are these basically combinations of methods
19 where you look at them in terms of extractions, in terms
20 of chromatography, and SRMs and then combine them, or do
21 you also use their exact mass assessments, using an exact
22 mass instrument?

23 DR. SHE: Combination method we use different
24 instrument platform. We use accurate mass measurement
25 high resolution tools. We are not combined with original

1 cheaper core tools. Does that answer your question?

2 PANEL MEMBER FIEHN: Yeah. I guess I'm asking
3 are you making a multi-targeted MRM method, or are you
4 making a PRM method on Q Exactive, I guess?

5 DR. SHE: Yeah. Actually, we are not trying to
6 use multiple MRM method. We use a full scan, combined
7 with a data-dependent analysis, or data-independent
8 analysis, or you call it a Swiss army knife kind of
9 approach, instead of traditional multiple reaction
10 monitoring.

11 PANEL MEMBER FIEHN: I see. I think that's a
12 very cost effective way and very fruitful way. And I
13 think also promising and, you know, it's the way the
14 science should go. We cannot have more and more classes
15 nominated, and always complain about lack of funding. We
16 have to make those more integrated methods work.

17 DR. SHE: Thank you.

18 CHAIRPERSON BRADMAN: With that, why don't we
19 take a pause from the discussion, and we have a
20 presentation from Dr. June-Soo Park from Department of
21 Toxic Substances. And then we'll have more opportunity
22 for Panel discussion and public comment and follow up to
23 the laboratory presentations. So we can continue.

24 Thanks.

25 (Thereupon an overhead presentation was

1 organochlorine pesticide result from a little more than
2 1,000 serums currently on the data review at final stage.
3 So I expect to release them at the end of November, this
4 month.

5 We also conducting metabolomic study using
6 subsamples of this study. I will talk one more time later
7 in my presentation. And the FREES Study. It's ongoing
8 FREES Study. We've been analyzing urine and the serum
9 samples for flame retardant, and their metabolites,
10 together with the hand wipe and the foam samples.

11 We're also conducting MAMAS. More than 500
12 samples for the analysis of routine POPs. Beside expanded
13 PFAS, we remember -- we used to analyze 12 PFAS. Now, we
14 expanded it to 35. So we applied this method to ACE Study
15 too. The preliminary result from MAMAS seemed promising,
16 so I hope we can show some data at the next SGP meeting.

17 --o0o--

18 DR. PARK: So now untargeted suspect chemical
19 screening in blood. We are using high resolution LC,
20 liquid chromatography, time of flight mass spectrometry.
21 This is exactly what it look like sitting in our lab.

22 So my slide to this topic is arranged in the
23 order of a background experimental workflow, like data
24 acquisition and process, and some preliminary result, and
25 some current future work related to this topic in human

1 biomonitoring.

2 --o0o--

3 DR. PARK: So why QTOF -- why QTOF screening? We
4 heard so many times, so many chemicals have released and a
5 thousand new chemicals are releasing to the market every
6 year without proper tests on toxicity and the human health
7 impact.

8 So this is good example. First one -- yeah, this
9 one, the PFAS. We're familiar with that, but I just
10 mentioned that we used to measure only 12, now expanded to
11 the 35. But reported there are 4,000 PFAS chemicals in
12 the market. There's no way we can keep it up.

13 Same story with pharmaceutical and consumer
14 products, pesticide, flame retardant. We just had PBDE
15 banned not long ago. But all the alternatives and the
16 replacement PBDE creating the same story -- same story in
17 the environment.

18 So what do you hope from conducting this study --
19 QTOF screening? We hope to set up some type of a -- some
20 type of a early warning system to the public for the
21 chemicals of some potential concern. That's what we hope.

22 --o0o--

23 DR. PARK: For this purpose, we used cat as a
24 surrogate for the human, because they share a similar
25 indoor environmental exposure pathway as humans. Worked

1 better. In our earlier study, we found a cat contains 5
2 to 10 times higher levels of POPs compared to the humans.
3 So presumably other chemicals too. This is important for
4 this type of work, because time of flight technique is
5 generally known to be less sensitive than the tandem mass
6 spectrometry. We use it for target analysis.

7 We have some leftover volumes available from our
8 previous study, both normal and hyperthyroid cat. Also,
9 this study requires only 250 microliters, so we could
10 afford. So we believe this exploratory study can be
11 easily adapted for human biomonitoring studies. I'm going
12 to talk about later this talk.

13 --o0o--

14 DR. PARK: So this is our publication early 2016
15 this year regarding PBDE levels in the cat. In this
16 study, we reported some dramatic decrease of PBDE levels
17 in cat. Since regulatory action was in place, we compare
18 2008 samples to the 2011. And also from the recent year,
19 we also found some positive association of PBDE levels to
20 the cat hyperthyroidism.

21 So for the screening purpose -- for the
22 untargeted screening purpose, we took 5 hyperthyroid cat
23 and randomly choose 5 normal cat, and did some analysis.

24 --o0o--

25 DR. PARK: So we used the very basic, very

1 simple -- the protein precipitation method together with
2 the extraction. We added a methanol and then homogenized
3 it, and the -- oh, sorry about that. I keep forgetting
4 next slide. Right now, I'm at the slide number 8. So we
5 use very simple extraction technique, and add the methanol
6 with few internal standards. We homogenized them and spin
7 it and take supernatant, and evaporate and reconstitute
8 with same solvent as a mobile phase, shoot in the LC
9 system.

10 Next slide.

11 --o0o--

12 DR. PARK: So this is a very simple workflow
13 chart for the QTOF. First, we did a full scan using
14 negative ion. We injected 3 times per sample. So
15 total -- you know, the 5, 5 -- 10. Thirty injection plus
16 1 blank, so additional 3. So I'm seeing the 33 injections
17 total.

18 So we extracted molecular features. Feature
19 means the -- you know, the potential -- you can think of
20 potential chemicals, but not yet to be identified, so --
21 but it contains all the information like accurate mass,
22 retention time, and the peak intensity.

23 So we have these features all lined up based on
24 the mass accuracy, retention time window. Then in the --
25 we apply some QC filters. Like, we inject 3 times. So

1 got to be detected 2 out of 3. Also, peak sizes should be
2 larger than our blank, which is background. Also, the
3 peak size should be large enough to survive our cut point,
4 in this case, 8,000. We apply 8,000.

5 So then after that, using all the survived
6 features, we send them back for the realignment. Then it
7 gave us about -- a little less than 1,300 features.

8 --o0o--

9 DR. PARK: Then I don't want to trouble you, you
10 know, the -- but I just want to show you how it look
11 like -- how method looking -- it is when you display all
12 1,300 from low to high and across all the injections. So
13 you see the normal cats sitting over here, hyperthyroid
14 cat sitting over here with a number of features.

15 So in order -- maybe some of us sitting here can
16 tell more information from out of this one, but not me.
17 Only thing I can see is some boundary here. I can see the
18 3 injections per sample, and also the -- I can see more
19 yellowish color over there. And I can see this circle
20 over here has some like high intensity features.

21 So that's why I love Venn diagram like this. It
22 simplify all -- everything, but it works for me. So based
23 on Venn diagram, you know, comparing between these 2 --
24 comparing these 2 groups, it showed about 1,200 features
25 overlapped. It means that it detected in both normal cat

1 and hyperthyroid cat. And the 57 features were detected
2 only in normal cat, and the 69 were detected only
3 hyperthyroid cat.

4 So out of these features, unfortunately -- okay.
5 So, I'm sorry. I'm still in the same slide. So we were
6 able to identify only less than 20 percent from using our
7 database in-house. That counts around 250 features.
8 So -- but that's good enough for us, using these features
9 identified.

10 --o0o--

11 DR. PARK: But, you know, the -- this is a list
12 of our libraries. The first that we -- we have about 100
13 flame retardant, and 250 PFAS library. Consumer product
14 library has a little bit larger -- more number of
15 chemicals, 2,500. We also have largest database, U.S. EPA
16 Tox21, and we have environmental organic acid around the
17 750.

18 --o0o--

19 DR. PARK: So again, the features we identified,
20 you know, out of those features, we narrowed down our
21 question to the -- we directly ask it's a simple question.
22 So what else -- what else chemicals this hyperthyroid of
23 the cats got exposed? Did it get exposed higher than the
24 normal cat? That was our question?

25 So we choose features from hyperthyroid cat. You

1 know, they showed the higher intensity than the normal
2 cat, so it could be more than two-fold and also have --
3 the difference should be significant. So when they
4 identify the features, we didn't consider less than 80 a
5 matching score.

6 --o0o--

7 DR. PARK: So this is our preliminary result. So
8 it listed as the highest score -- highest score to the low
9 score. And our first chemical duloxetine. This is
10 antidepressant. And I'm seeing the PFAS too, pesticide
11 pharmaceutical, paint ingredients, and some fragrance, and
12 also the -- some flea control, and some personal care
13 product chemicals too.

14 You know, the -- a publication published by the
15 Schymanski, ES&T 2014, she classified competence levels
16 for identification. So when we have a reference standard,
17 authentic standard, it falls into the highest level 1.
18 But if you have only exact mass information, it's lowest
19 level or level 5.

20 If you have further information like isotope and
21 the publication -- some fragmentation information, you can
22 raise your level to the -- from 5 to 2, 3, 4. So based on
23 this classification, we are classified our level of
24 confidence. The first chemicals we have with highest
25 score, duloxetine, it falls level 3, and PFAS, yes we have

1 a standard that's in level 1, and the rest of chemicals we
2 identify fall into level 3 to 4. So this means that the
3 features we identified may not be the chemicals that we
4 think it is. I just want you to keep in mind.

5 --o0o--

6 DR. PARK: I stick in this slide, because I like
7 it. You know, I also like to show a good example of what
8 I meant by early warning system. So we happened to
9 identify F-53B. This is known as a replacement PFAS.
10 More accurately this is replacement of PFOS. So if you
11 see the structure, you know, the 6 carbon fully occupied
12 by the fluorine, and connected by ether link, means that
13 it's breakable by any enzyme activity in your body. It
14 can form 6 PFAS.

15 Although, this compound was detected in only one
16 hyperthyroid cat, from now on we're going to keep our eye
17 on it in every sample. That's what I meant about the
18 early warning system.

19 --o0o--

20 DR. PARK: So what about the rest of 80 percent
21 features, we couldn't identify using our database?

22 I don't want to -- you have to go by the --
23 some -- the whatever information available out there like
24 on-line database, you know, together with your
25 fragmentation information, isotope information. But I

1 don't want to spend too much time on this one. Just one
2 slide enough for me, because this is not what we are
3 currently focusing on due to the limited resources.

4 But I'd like to share some workflow -- very basic
5 in the early stage -- workflow to show the complexity and
6 limitation of this type of work. So let's say the 1,000
7 features were not identified, and you picked the one
8 feature with certain mass. You know, the -- using this
9 method, you ask to generate the formula. It give you
10 the -- it gave us 18 formulas with the -- in the order of
11 score.

12 So first 3 -- your left side is the isotope
13 information. The most probably -- isotope information, we
14 use the chlorine as a filter, so it will display
15 anything -- you know, the possible combination with
16 chlorine.

17 So, you know, the first 3, we used on-line
18 database. We just swing by the on-line database like
19 ChemSpider. First 3 didn't hit any, you know, 0 hit, 1
20 hit, 0 hit. So we eliminate those 3 -- top 3 scores. And
21 next to these 2, we eliminate them because it has 3
22 chlorine, but we see the isotope distribution. We are
23 familiar with the chlorine isotope distribution. It's a
24 typical isotopic pattern for the 2 chlorine.

25 And the rest of 12 more formulas were eliminated

1 due to the lower score. So we picked C14 H10 Cl2 with a
2 monoisotopic mass of 339. We entered in ChemSpider. It
3 came back with 352 hits. This is kind of average case
4 you're going to run into when you swing by the on-line
5 database system, and the chemical they give you as a
6 number one hit is that these chemicals -- but so far, I
7 did all the Google search, couldn't find any information
8 yet.

9 --o0o--

10 DR. PARK: So next step for this project, we will
11 continue to identify the features, also to continue
12 through the confirmatory activity to raise our confidence
13 level 1 or 2. So ultimate goal is to select, out of these
14 identified features, like 5 to 10 compounds of concern to
15 designate for biomonitoring. Of course, we always work
16 with our colleagues in OEHHA as usual.

17 And we need -- and then also you select target
18 compound. We're going to develop the method for the
19 quantitation, as you know, as you use your -- and, of
20 course, we have to finish the SOP to apply to the human
21 studies, like 3 studies I'm going to introduce you next 3
22 slides.

23 --o0o--

24 DR. PARK: So we are participating in the U.S.
25 EPA Round Robin study. U.S. EPA prepare some samples

1 based on their ToxCast library chemical list. And we'll
2 distribute to us samples many different labs, because
3 they're using different techniques.

4 We belong to Lab C, because we're using LC time
5 of flight. You know, maybe Dr. She's group maybe belong
6 to the Lab B, because they have orbit trap. And I, to my
7 understanding, Lab A has GC time of flight like Oliver
8 Fiehn. So U.S. EPA will compile all the results to find
9 some common ground. We expect this sample arrive very
10 soon.

11 --o0o--

12 DR. PARK: So second project, we are
13 collaborating with the UCSF, UC San Francisco, is we
14 recently received 5-year grant from NIH. Ultimate goal
15 for this study basically same as the cat study. We want
16 to discover some normal environmental contaminants in
17 human body. So our role is to develop QTOF screening
18 method. The -- and the -- so build environmental organic
19 acid detected in the human body.

20 So this is so far the composition of library, you
21 know, the monitored chemicals, other pesticide metabolites
22 and the phenols. PFAS, we have phthalate metabolites.
23 I'm seeing the -- some PCB, PBDE metabolites too.

24 And then again, the same concept, you know,
25 the -- also, you have 10 priority environmental organic

1 acid. You develop the target method to confirm and
2 quantify them. So our collaborators who we do assessment
3 for the exposure to these 10 priority environmental
4 organic acid.

5 --o0o--

6 DR. PARK: Our last project collaborate with
7 Uppsala University -- I'm almost done -- is a metabolomic.
8 Dr. Samira Salihovic who's sitting over there, she's done
9 sample analysis the last month. You know, she analyzed
10 325 subsamples out of teacher -- California teacher
11 population. So we're going to look into the -- some
12 variation in the metabolomic profile against the POP
13 exposure. You know, the -- you know, we already have POP
14 data.

15 And then we're going to compare the senior group
16 for California teachers and the Uppsala senior population
17 focusing on the -- around the 87 -- around the 80/70. So
18 she using the primary database for the peak
19 identification. She using library built between Uppsala
20 University and the Colorado State University. Also, she
21 will using -- she'll be using secondary database, like
22 on-line database like METLIN.

23 --o0o--

24 DR. PARK: So as you see, this is definitely a
25 team effort, of course, of this project being led by

1 (Laughter.)

2 DR. PARK: Thank you very much.

3 CHAIRPERSON BRADMAN: So we have 5 minutes for
4 Panel questions and comments.

5 Dr. Fiehn.

6 PANEL MEMBER FIEHN: Thank you. Very
7 interesting. And I think it's also a part of the future
8 to look broadly. And I think you have nicely shown that
9 you find things that you already know. But in addition,
10 maybe new, exciting findings in the cats at least.

11 Now, obviously, when you extract blood plasma
12 with methanol, you will get a lot of endogenous lipids at
13 very high concentrations, which make most likely the
14 majority of all those features that you see.

15 Have you thought about filtering the data set
16 just based on isotope pattern? Like you showed for the
17 chlorines, if you have 2 or more chlorinated compounds,
18 then you nicely can see the isotopic patterns. Can you
19 just filter the data set on that?

20 DR. PARK: I think I have to defer to the -- our
21 expert.

22 PANEL MEMBER FIEHN: The question was that you
23 showed spectra for chlorinated compounds, and the question
24 is could you just filter all your data based on that kind
25 of pattern, so that you only look at chlorinated, for

1 example, and not get disturbed by all the lipids and so
2 on?

3 DR. WANG: Yes, the method we use is in the
4 molecular formula generated step. You can just force the
5 chlorine to be at least 1. So by forcing to be at least
6 1, you basically bring the scores of the features that has
7 like higher scores, so that they would like -- you can
8 list all the features according to the scores, and the top
9 scores would have like chlorine features.

10 And so we look at the features by first their
11 scores and also by intensity. So you want to pick those
12 with the proper chlorine feature and also with like high
13 intensity ones.

14 Miaomiao Wang from DTSC.

15 DR. SHE: Yes. And what Miaomiao said, I think
16 chlorine is very typical for the M plus 2 elements. So
17 you can use repetitive search or recursive search, a sure
18 M, and then you definitely can go through your database,
19 ferret it out. That's what I'm -- also, chlorine have a
20 feature called mass deficiencies. Combined with mass
21 deficiencies feature you may easily identify which
22 compound with chlorine.

23 DR. WANG: Yes, yes.

24 CHAIRPERSON BRADMAN: Dr. Quintana.

25 PANEL MEMBER QUINTANA: I have a question

1 about -- I guess framed through the lens of what a great
2 job the California Biomonitoring community has done in
3 giving results to participants, one of the issues of doing
4 non-targeted analysis is you now have the ability to see
5 maybe too many things, including drugs of abuse, for
6 example.

7 So I would just -- especially, if we're trying to
8 take biomonitoring to communities, one of the biggest
9 concerns community members have is misuse of the samples,
10 in the sense of detecting drugs of abuse, or something
11 that could put them at risk in their minds, you know, for
12 either censure or, you know, losing child custody, or
13 something like that.

14 And so I'm wondering if we're thinking about how
15 we frame the consent, or how we even have explicit rules
16 for -- and analytical approaches that make people feel
17 very secure that looking at those things would not be
18 known.

19 Even in the cats, one thing that came up was the
20 antidepressant, which may be -- the owner might not want
21 people to know they -- you know, it would be in the house
22 or something like that. So it's -- it's just something
23 that I think we should be proactive. And I think the
24 staff is excellent at being proactive in this area.

25 And it came up for us doing non-targeted analysis

1 of house dust samples, where we saw it from a low income
2 population, where we saw many, many different drugs of
3 abuse through doing non-targeted analysis, and that, you
4 know, was fortunately covered by our consent form, but it
5 was -- you know, it's an issue for communities, I think.

6 DR. WU: I'd like to comment on that. This is
7 certainly an issue that's come for other groups dealing
8 with non-targeted analysis, not only drugs abuse -- drugs
9 of abuse, but also medical conditions that might be
10 revealed through this sort of testing.

11 This -- we're not -- we have not done any of this
12 non-targeted screening on population base. We're not
13 quite there yet, but it's something we're thinking about
14 in our informed consent in terms of very explicitly
15 calling out what drugs will not be covered. And we always
16 include language about how the results are private.
17 They're only for you. They're not revealed to your doctor
18 or to your employer. And it's language we will continue
19 to work on, as this kind of work gets closer for public
20 use.

21 MS. HOOVER: And I'll -- this is Sara Hoover.
22 I'll add just one other side note on this. This came up
23 with Jianwen's choice of benzophenones, we'll be talking
24 about the class of benzophenones. So our other constraint
25 with non-targeted is that it actually has to be listed as

1 a class, you know, designated chemical.

2 So if we were going to undertake an analysis like
3 this, in an actual Biomonitoring California study, and I
4 think both Jianwen and June-Soo alluded to this, we have
5 to actually deal with the fact of identifying it
6 officially as something that we can look for in samples.
7 So that's another step.

8 PANEL MEMBER QUINTANA: But just to clarify my
9 point, if some -- if making sure the data itself is
10 secure, because somebody, if they got access to the data,
11 even though your scientists did not look for compounds,
12 because it was not a class, they could find them. So I
13 think you just assure the issues --

14 MS. HOOVER: No, I understand. I was making a
15 side point. So I was going -- going further, but I think,
16 you know, Dr. Wu had addressed that. And certainly data
17 security and confidentiality is a huge priority for the
18 program.

19 DR. SHE: Also, I'd like to add a point on --
20 that's a very good question, we -- a lot of the unknown
21 area to do unknown chemicals analysis -- we need to
22 explore it. But from a technical point, mass spectrometer
23 software allow you have inclusive list and exclusive list,
24 so which we are for sure something -- we concern with
25 drugs, we can put them in exclusive list, so that make

1 sure we don't identify them.

2 And also on the data acquisition part, even
3 further to data in computation, we can exclude them. On
4 the data acquisition, we also can use certain technology.
5 I don't know, like we talk about the data-dependent
6 acquisition, make sure some concerned chemical will not be
7 acquired. And beyond, we archive data, you know, a safe
8 way. That's my comment.

9 MS. HOOVER: Okay.

10 CHAIRPERSON BRADMAN: So I'm going to interrupt
11 here. We're still on time, but we also incorporated some
12 time for public comment in this period. So why don't we
13 go there, and then we'll have until 12:30 for more
14 discussion.

15 Are there any public comments related to this
16 topic?

17 Anything from --

18 MS. DUNN: We don't have any in the room or on
19 the Internet currently.

20 CHAIRPERSON BRADMAN: All right. Well, just a
21 reminder, if you do have input on this, if there's --
22 there's more time until 12:30. And then, of course, in
23 the afternoon, we have open comment on anything related to
24 today's discussion.

25 So why don't we continue that discussion. I

1 think this issue around consent is very interesting. I
2 know with regard to our studies, in Salinas and elsewhere,
3 we specify in our consents that we'll measure
4 environmental chemicals, and that we've never targeted,
5 you know, anything unrelated to an environmental chemical.
6 Environmental being sort of exogenous, non-pharmaceutical,
7 you know, non-drug substance.

8 We do often get -- as part of our consent, we get
9 approval for future testing of environmental chemicals.
10 And one thing to consider, as we move on, is how to return
11 results when we think about non-targeted, or how to frame
12 the consent related to that. And it may be, at some
13 point, for some of these samples, they can be totally
14 de-identified.

15 You know, for returning results, of course, you
16 need some personal identifying information for contact and
17 outreach. But maybe we need to incorporate a concept in
18 here where we have ultimately all the demographic and
19 other information, geographic information, but if they're
20 permanently de-identified, that might allow other kinds of
21 investigations of environmental chemicals.

22 And if incidentally we pick up some things that
23 were not -- you know, not within our framework of looking
24 at environmental chemicals, that can be essentially
25 ignored or -- I mean, that's in a whole other discussion,

1 but at least there's not a risk of an individual being
2 compromised by a hack or some other breach of information.

3 DR. PARK: That's why the -- I'm sorry. I
4 emphasized, you know, the ultimate goal for the cat study
5 also the -- one of our -- the human biomonitoring study.
6 You know, also you have a list of chemicals you are
7 concerning. We try to prioritize them, put it in our
8 target analysis basically, you know, the same as all
9 the -- all our designated chemicals we are analyzing for
10 the -- like POPs, PCB.

11 You know, we can -- we can secure the data in
12 that way. You know, I agree with you, I don't see any
13 other way around to have this data packet together with
14 your return -- you know, I'm always kind of sensitive to
15 any community-based study, because I know how much they
16 panic when they see some numbers they don't understand.
17 Also, that they can -- they sometimes use, you know,
18 the -- sometimes misuse it without proper background and
19 education.

20 So that's -- that's why I'm saying my point is I
21 totally agree with you and Dr. Quintana, yeah.

22 CHAIRPERSON BRADMAN: Can I make -- and extend
23 that a little bit. I mean, we do have some history with
24 somewhat related work around genetics and genome-wide
25 studies, and also even with epigenetics where it raises

1 issues of report back.

2 It seems to me that in a way us dealing with
3 these issues really put us at the forefront of a key, you
4 know -- ethical issues in environmental health research.
5 And maybe this is something that should be raised also
6 more broadly. I mean, there could be a recommendation
7 from the Program or this Panel that there be a National
8 Academy of Science Committee that really explores this
9 issue.

10 There was a report, you know, they did years ago
11 about the implications of environmental health research
12 and testing in homes and housing. In fact, there's a
13 paper in EHP this week on ethical and legal obligations
14 around doing studies and measuring contaminants in
15 people's homes.

16 I think maybe there could be some sort of formal
17 assessment that could both guide the California
18 Biomonitoring Program, but also other biomonitoring
19 elsewhere. I'm sure other people are thinking about this.

20 DR. SHE: I have concept clarification here. So
21 untargeted, or semi-targeted, analysis provide result --
22 is qualitative. Targeted analysis, or we called master
23 method to provide results -- quantitative. So the -- this
24 is difference. So the domain of these 2 different
25 approach, I do not think untargeted analysis result can be

1 returned to the patient.

2 Like June-Soo mentioned, you know, his -- in
3 talk, these qualitative results will go through
4 quantitative targeted analysis to refine and tune-up. So
5 I like the approach. You mentioned that we de-identify
6 sample to help the qualitative analysis. Once we study --
7 because untargeted analysis have no standard inside, so
8 that's low quantitative information. We can estimate.
9 Yeah, that's my --

10 MS. HOOVER: Sorry. I just had to throw in there
11 and stop Jianwen at that point, because actually we can
12 return -- you know, if it's just to detect, it doesn't
13 have to be quantified. So our results return is any
14 results.

15 So we are in a bit of a -- I think this is a
16 great suggestion. I think it's a very important topic.
17 And we have to get with our, you know, results return
18 specialists, and more broadly how would we address this,
19 including the confidentiality issues.

20 And I don't think, you know, given the nature of
21 our law and our mandate, we can't like permanently
22 de-identify and then use those samples. If we've taken
23 samples under our mandate of, if you want your results,
24 you get them. Then any finalized result our ethic is we
25 return it. So that's the situation we're in for the

1 Program.

2 DR. SANDY: Hi.

3 CHAIRPERSON BRADMAN: Dr. Quintana. Oh, okay.

4 DR. SANDY: I'm Martha Sandy. I have -- have a
5 new question for June-Soo, I think. Sorry. So the start
6 of this discussion, I think, is -- the concern was when
7 you measured some of the compounds that were identified in
8 the -- in your library as possibly being pharmaceuticals
9 in cat blood.

10 Acetaminophen, for example, I'm just wondering --
11 and then you had a ranking of the certainty. That's not
12 the right term, but you had category 1, 2, 3, 4. And I
13 don't believe it was in -- I think it was in 4. So my
14 question for you is, have you -- based on that program, do
15 you feel confident that you identified acetaminophen or is
16 there not confidence? And perhaps when you don't have
17 confidence in something, you wouldn't even consider?

18 DR. PARK: That's the kind of whole issue we've
19 been discussing about. You know, the -- when you say --
20 when you say a confidence, you know, we are only
21 confident -- you know, that's what they classify the -- I
22 like it. You know, they classified 1, 2, 3, 4, 5. We are
23 only confident as to what the level says. You know, we
24 have isotope information. If you have some fragmentation
25 information, also if you have some publication, talk about

1 the chemicals, show -- you know, the -- provide a lot of
2 information about it, then we are as confident as what we
3 have, based on the information.

4 So if you say, hey, are you 100 percent sure
5 that's what -- that that's the what you said what it is?
6 I don't think so. I don't think so. That's why the -- we
7 want to circle back. Once you have something you are
8 interested in, we want to circle back and take it as --
9 use the chemicals.

10 We probably tried to search for the -- some
11 standard, if we can purchase from the company. If not,
12 probably try to arrange the level as high as possible.
13 That's best thing we can do. Yeah. Did I answer to your
14 question?

15 DR. SANDY: I think so.

16 MS. HOOVER: And this is Sara Hoover again. I
17 think I know where Martha was going. And I want to
18 clarify one thing I said, which it's true that there's a
19 certain thing that we call a result. You know, we have a
20 result that's finalized and certified. So the question
21 is, you know, from non-targeted, what would we call a
22 result? You know, would we have a confidence level? I
23 think it's an interesting question. And I know just
24 speaking from someone who's participated in biomonitoring
25 and been biomonitored, I'd still want a result.

1 You know, I don't need 100 percent confidence.
2 I'd be very interested to know like a non-targeted screen
3 of my blood. So I think that's the ethic, if you sort of
4 put yourself in that position of what would I want to know
5 versus what I -- what is too unclear to convey.

6 So I think that line we certainly haven't gotten
7 there yet. We haven't run this on any people that we've
8 consented, and -- but I think that's an important pilot to
9 undertake and actually figure out what is the result and
10 how would we return it?

11 PANEL MEMBER QUINTANA: I just thought of another
12 quick follow-up question. Maybe it's for our legal
13 counsel in the back there, but -- so when we're doing
14 studies -- research studies at a university, and there's
15 potential that the data would be compromising the subject,
16 then you can apply for a certificate of confidentiality,
17 where it cannot -- could not be subpoenaed, for example.

18 But I'm just curious if this data is -- is it
19 subpoenaable? I mean, it just -- it's a question, because
20 even a qualitative finding of methamphetamine in the blood
21 might be of interest to someone in a child custody battle.
22 You know, so I'm just curious about that protection. I
23 know it's not quite the same as what I've dealt with.

24 STAFF COUNSEL KAMMERER: This is Fran Kammerer,
25 staff counsel. That's a really good question. I am not

1 sure. I'd have to look that up. It would probably depend
2 on the case and the judge, so I can't give you a straight
3 answer for that. I'm sorry.

4 CHAIRPERSON BRADMAN: I can just comment with a
5 little personal experience. We -- for CHAMACOS, we got a
6 certificate of confidentiality, which, I mean, we think it
7 was an important thing to do. They've never, ever been
8 tested in court. We had one situation where we had a
9 potential child custody issue with a participant in one of
10 our studies, and we were requested to release some of our
11 samples so they could be tested and shown that -- well, in
12 this case, they wanted to show that there was no drugs
13 present. But then the issue was resolved, and we never
14 had to actually confront it directly on, which we were
15 glad. I mean, our feeling was that we could not release
16 those samples.

17 But, you know, there's always a potential for
18 that to come up. The other piece where we've been
19 concerned, and this should -- you know, when you deal with
20 illegal drugs and things like that, what would raise to
21 the level of child abuse? And if, for example, you did an
22 untargeted analysis and identified, you know, a dangerous
23 material that's -- that the child is being exposed to,
24 like an illegal drug, as researchers we're obligated to be
25 mandatory reporters, you know, would that raise to the

1 level of neglect or child abuse or something like that?
2 And those would be all things to think about very closely
3 before you start testing samples.

4 DR. WU: I wanted to comment on what Sara had
5 said earlier before we got to this issue of revealing
6 confidential information, which is that maybe the banked
7 samples, for example, the GDSP MAMAS samples that we've
8 used for other studies, maybe this would be a good match
9 for a population based non-targeted screening. Those are
10 not subject to results return, because we don't have the
11 identifiers on them.

12 And while we wouldn't be able to look for
13 specific exposure, we would get a population -- an idea of
14 exposure across the population.

15 MS. HOOVER: I just also wanted to add that we
16 will definitely follow up. We don't have the answer, you
17 know, in terms of our particular data. And I think it's
18 an excellent question. We will follow up and look into
19 specifically what our data would be subject to, the data
20 we collect.

21 DR. SHE: One more comment. I think that's a
22 very good question. I compare this unknown analysis with
23 the forensic analysis. So the data must be
24 cross-validated, supported with other documentation, if
25 legal issue come. That's my look at the forensic

1 analysis, the lens, to check the unknown analysis. So we
2 provide some fingerprint.

3 STAFF COUNSEL KAMMERER: This is Fran Kammerer.
4 I just want to add one thing to what Dr. Bradman said. He
5 is reassuring, and I agree with him, most courts are --
6 they hesitate about disclosing personal information. And
7 that's the kind of thing that would be taken in chamber
8 and maintained confidential to the -- you know, to every
9 extent that they can, but -- and they try to respect
10 certificates, or anything that will show any kind of
11 degree of confidentiality. But other than that, it's
12 usually in a criminal case and it's up to the judge.

13 CHAIRPERSON BRADMAN: All right. We have about 7
14 more minutes to be on time. So, Dr. Fiehn.

15 PANEL MEMBER FIEHN: Yeah. I would definitely
16 favor, if we would have maybe a special session on these
17 ethical issues, clearly inviting people who have thought
18 about the ethical issues and genomics and SNP genotyping.
19 I am sure they have all thought about it very thoroughly
20 over the last 10 years, where we can borrow ideas and
21 information.

22 Secondly, of course, we should not forget that,
23 you know, we have to distinguish here between
24 OEHHA-sponsored or -initiated studies, where data have to
25 be given back from other studies that people conduct.

1 There are 300 studies on-line, including many,
2 many studies done in humans in untargeted metabolomics,
3 where people could, in principle, go in and screen for --
4 you know, take the raw data and do their fantastic data
5 processing tools to find exposome type of compounds,
6 pharmaceuticals, illicit drugs and others.

7 So this is going on. People do this. But this
8 is different from the mandate that we have here. So these
9 studies are going on. And all those public data cannot be
10 identified to specific people. They are all
11 de-identified. They're all very broadly classified, if at
12 all. So you would never have the opportunity to go and
13 even go to a certain region or a certain neighborhood, I
14 would say, right, for these data that are already public.

15 And this is clearly mandated, for example, by the
16 NIH, because the NIH spends \$35 billion on research, and
17 they want the data to be public. And I think this is a
18 good move to say data should not be behind screens. They
19 should be public, but, of course, protecting the public as
20 well.

21 MS. HOOVER: I'll just follow up -- 2 things just
22 to clarify. The thing that I was talking about results
23 return is Biomonitoring California, not just OEHHA.

24 PANEL MEMBER FIEHN: Oh, okay.

25 MS. HOOVER: Yeah, so that's our whole Program's

1 ethic. And that, yes, we do actually make summary data
2 public already. So that's part of our ethic, too, is that
3 we have our individual results that are always kept 100
4 percent confidential, but that we do find a way to do
5 summary data presentations. So this isn't -- that would
6 be another angle on this. But I thought Nerissa's flag
7 about the kinds of samples we can use to start
8 non-targeted work was a really important point, and that's
9 something we could pursue.

10 And I would suggest actually that we add 5
11 minutes to our lunch and go ahead and -- unless anybody
12 has any last comments?

13 CHAIRPERSON BRADMAN: That sounds good.

14 (Laughter.)

15 MS. HOOVER: So before you break, I'm going to
16 hand the phone -- microphone back to Fran who will do your
17 reminder. And then, Asa, you can do the other notes in
18 there, too.

19 STAFF COUNSEL KAMMERER: Just reminding you not
20 to talk about subject matter of the Committee at your
21 lunch, and keep that for the public environment here.

22 Thank you.

23 MS. HOOVER: You don't have your -- there's other
24 notes for you.

25 CHAIRPERSON BRADMAN: Yeah. No, no, no. I got

1 it.

2 MS. HOOVER: Okay.

3 CHAIRPERSON BRADMAN: Just as a reminder, we have
4 an hour and 10 minutes, maybe a few minutes longer for
5 lunch. And we'll start the meeting again promptly at 1:45
6 p.m. So if you could be back by 1:40, so we can reconvene
7 on time.

8 There's the CDPH cafeteria just outside the
9 auditorium. That's probably the best place to go in terms
10 of time to get back here on time, which is crucial, and
11 essential.

12 (Laughter.)

13 CHAIRPERSON BRADMAN: Thank you.

14 (Off record: 12:27 p.m.)

15 (Thereupon a lunch break was taken.)
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25

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

2 (On record: 1:45 p.m.)

3 CHAIRPERSON BRADMAN: So it's -- actually, we
4 have less than a minute. We're exactly at the time to
5 start the meeting. I want to welcome everyone back from
6 lunch, and officially call the meeting back to order. And
7 I also want to introduce Dr. Myrto Petreas, Chief of the
8 Environmental Chemistry Branch of DTSC, who's going to be
9 introducing, I think, a dear colleague of all of ours, Dr.
10 Peggy Reynolds.

11 So thank you, Dr. Petreas.

12 DR. PETREAS: Thank you. Welcome back from
13 lunch. It's a great pleasure to have Dr. Reynolds with us
14 today. She and I have been working together for over 20
15 years, combined expertise in epidemiology and persistent
16 organic pollutants, or POPs, have had many great ideas and
17 some of them even got funded. And I counted 5 grants
18 altogether.

19 So our latest study involves measuring POPs in a
20 subset of the California Teachers Study. And periodically
21 I give you updates on where we stand with that study.
22 We're very happy that Dr. Reynolds and the steering
23 committee of the Teachers Study have agreed to share data.

24 And now our website where we have our database
25 with the results -- we have aggregate data for over 2,000

1 women. This is the largest cohort of California data set
2 on POPs -- contemporary POPs.

3 So to give you just a brief description of her
4 distinguished career. She's currently a senior research
5 scientist at the Cancer Prevention Institute of
6 California. She's also consulting professor in the
7 Department of Health Research and Policy in Stanford
8 Medical School, and a member of the Stanford Cancer
9 Institute.

10 She was appointed to the Carcinogen
11 Identification Committee for Proposition 65 by Governor
12 Brown in 2012. Dr. Reynolds has spent several years as an
13 epidemiologist for the California Department of Public
14 Health in this building. First, for the San Francisco Bay
15 Area Surveillance, Epidemiology, and End Results Program
16 and later as Chief of the Environmental Epidemiology
17 Section in the Environmental Health Investigations Branch.

18 She has conducted many epidemiology studies of
19 breast cancer and cancers in children. And today, she
20 will provide an overview of the California Teachers Study,
21 including some new findings from our substudy.

22 So with that, welcome.

23 (Thereupon an overhead presentation was
24 presented as follows.)

25 DR. REYNOLDS: Thank you. So my -- can you hear

1 me?

2 I'm okay.

3 Well, thank you. Actually, looking around, it's
4 actually nice. There's so many people I know here and
5 have known for awhile. So thank you for the opportunity
6 to talk a little bit about the California Teachers Study,
7 and in particular a collaboration that we're very happy to
8 have had an opportunity to have with Biomonitoring
9 California.

10 --o0o--

11 DR. REYNOLDS: I would like to sort of structure
12 this to talk about several things. First, give just a
13 little bit of background about the California Teachers
14 Study. I know you've heard about it from Myrto over time,
15 but I'll give you just a little backdrop. Then talk about
16 the study of interest here, which is the CTS study of
17 persistent organic pollutants, or POPs, a little quick
18 update and some recent results that you may find to be of
19 interest.

20 And then I wanted to just mention a couple of
21 ancillary studies that have subsequently been funded built
22 on this POPs study that I think you also find of interest.

23 --o0o--

24 DR. REYNOLDS: So the California Teachers Study
25 was initially funded with breast cancer tobacco tax

1 dollars. This was a one-time allocation to the California
2 Department of Public Health, formally known as the
3 California Department of Health Services to the Cancer
4 Registry. And it consisted of a collaboration of
5 epidemiologists from the various regional registries,
6 deciding that the best investment for this one-time
7 allocation was actually to construct a cohort study that
8 would be California-specific, that would be basically
9 designed to really directly address risk factors for
10 breast cancer, and a broad spectrum of potential risk
11 factors for breast cancer in women in California.

12 So we recruited women by inviting every woman
13 that was enrolled in the California State Teachers'
14 Retirement System in 1995, both active and retired
15 teachers, and school administrators. We ended up with a
16 cohort of 133,479 women who agreed to participate in this
17 prospective study.

18 So what we have in California is a statewide
19 study that is very geographically diverse. It is, in
20 fact, the largest prospective study that was specifically
21 designed to study breast cancer. And now with over 20
22 years of follow-up, we're finding that it truly is a
23 valuable source of information on women's health above and
24 beyond breast cancer.

25 In the 20 years since we had that one-time

1 effectively, and thoroughly by linking the cohort annually
2 to the California Cancer Registry, which covers the State
3 for all newly diagnosed cancers, to hospital discharge
4 data, statewide, and to State and national death files.

5 So into 2015 to date, we have over 20,000 cases
6 of cancer that have been diagnosed in cohort members of
7 all sites combined. The most common site, of course, is
8 breast cancer. We have over 7,000 cases of in breast --
9 of invasive breast cancer that have been diagnosed, and
10 1,600 or so cases of in situ breast cancer.

11 To date, there are almost 27,000 deaths among
12 women in the cohort. We have detailed information on
13 cause of death through 2013, at which time we had over
14 7,000 cancer deaths and a little over 1,300, close to
15 1,400, deaths due to breast cancer.

16 In addition, even though we weren't able to
17 collect biospecimens at baseline for all 133,479 women, as
18 we would have loved to, we have over time been building a
19 biobank that is a resource for additional studies. And we
20 have now over 20,000 specimens in the biobank, consisting
21 primarily of blood samples, but we also have urine
22 samples, toe nails, and saliva. So we have a variety of
23 biospecimens, predominantly blood specimens.

24 --o0o--

25 DR. REYNOLDS: So just to give you a quick

1 overview. And I'm not going to go through this in great
2 detail. I know you all have the slides and the slides are
3 on-line. I wanted to emphasize that this has been a
4 multi-institutional effort since day 1. Our organization
5 has really focused on interest in social and environmental
6 factors for cancer, and also nutrition and diet.

7 The City of Hope, which is currently the
8 coordinating center for the study, has focused a lot --
9 our investigators there have been very interested in
10 particularly hormonal carcinogenesis. Leslie Bernstein,
11 as many of you know, is one of the world's experts on
12 physical activity. Has done a great deal of work in this
13 cohort on that, and genetics, and biologic mechanisms, and
14 really innovative methods of data management.

15 Our colleagues at UC Irvine focused on genetics,
16 and as you will see, has a variety interests, one of which
17 I'm going to talk about a little later, which is
18 mammographic density.

19 --o0o--

20 DR. REYNOLDS: So I'm not going to go through
21 this whole list, but I wanted to give you an idea of some
22 of the ancillary grants that have been funded for the
23 Teachers Study above and beyond infrastructure, covering a
24 variety of kinds of risk factors for breast cancer, for
25 other cancers, and even other health outcomes with

1 colleagues in the State Health Department, and OEHHA.
2 We've been doing work on air pollution and cardiopulmonary
3 mortality.

4 And the 3 that I've highlighted there are those
5 that are actually specifically relevant to the POPs study,
6 which is really the topic of today.

7 --o0o--

8 DR. REYNOLDS: So if you want more information on
9 the Teachers Study, all of our questionnaires are on-line,
10 all of our newsletters are on-line, and there are other
11 little tidbits about Teachers Study on our website, so
12 please feel free to visit www.calteachersstudy.org for
13 more information.

14 --o0o--

15 DR. REYNOLDS: So the study of interest today
16 really is our study of persistent organic pollutants in
17 breast cancer. This is a study that was funded in 2010 by
18 the California Breast Cancer Research Program as part of
19 its strategic research initiatives. Our specific aims
20 were really to -- initially, we were very focused on
21 PBDEs, to screen for predictors of PBDEs. Really, the
22 primary aim is to assess risk of breast cancer for these
23 families of chemicals, and also to explore windows of
24 susceptibility within those analyses.

25 So the chemicals of interest were chosen because

1 they are endocrine disrupting and extremely persistent,
2 both in the environment and in people. Those we called
3 "the old" are a series of legacy chemicals, PCBs, and a
4 number of organochlorine pesticides, and "the new", at the
5 time -- although some of these have now been
6 discontinued -- were really -- was our focus on what, at
7 the time, appeared to be a particularly provocative topic,
8 that of the polybrominated diphenyl ethers, the PBDEs.
9 And as the study began, we originally had hoped to look at
10 some of the replacement BFRs, but there were some
11 laboratory constraints. And our collaborators with
12 Biomonitoring California offered to add into the mix the
13 per- and poly-, per- and polyfluoroalkyl substances,
14 PFASs, as we now call them. It was so much easier when
15 they were "PFCs" to pronounce, but there you go.

16 (Laughter.)

17 DR. REYNOLDS: Now, they're PFASs. I have to
18 keep up with the terminology with my colleagues.

19 So this has been an ongoing collaboration with
20 the environmental chemistry laboratory with Myrto and
21 June-Soo and other colleagues in the lab.

22 --o0o--

23 DR. REYNOLDS: So the status of the assays right
24 now is that we do have assays completed for 19 congeners
25 of PBDEs, for 12 of the PFAS. And we will soon have --

1 the assays have been completed, and we Will soon have in
2 hand this very month the completed assays for 15 congeners
3 of PCBs and 7 pesticides. And we're looking forward to
4 getting that final data set.

5 Because of this, we haven't yet really had an
6 opportunity to begin an analysis of breast cancer risk.
7 We have been waiting for completion of the assays.

8 --o0o--

9 DR. REYNOLDS: But meanwhile, we've had other
10 things to do and other things to talk about. I will share
11 a couple of those things with you. I did want to show you
12 this map. This is actually a pin map that is the location
13 of the participants in the POPs study. And as you can
14 see, the general distribution of participants in this
15 study is very similar to that for the cohort as a whole,
16 and again, focuses on some of the urban areas, but we also
17 have participants in other more rural areas of the state.

18 --o0o--

19 DR. REYNOLDS: This has been an aging cohort.
20 And so currently, for the participants in this study, and
21 because it was designed as a breast cancer case-control
22 study, so that the controls were age-matched to the cases,
23 the mean age of participants currently is 67 years with
24 still a fairly wide range, 40 to 94 years. And it is --
25 the cohort is predominantly non-Hispanic white. Although,

1 as part of our POPs study, we did try to over -- do some
2 oversampling of women of color so we could talk a little
3 bit about them.

4 But this does pretty much represent a largely,
5 not quite elderly -- I don't want to call 67 years
6 elderly, an older predominantly non-Hispanic white cohort
7 of women that is very representative of the distribution
8 of women in California. So while waiting for final data
9 to come through, so we can start our risk analyses, we've
10 had an opportunity to look at a number of things.

11 I think Myrto has talked with you all before
12 about a study we did looking at PBDE levels for women
13 living near waste sites. This is the relatively
14 hot-off-the-press publication from Environmental Science
15 and Technology Letters that was of sufficient interest
16 that we made the cover. So I did want to share the cover
17 with you.

18 --o0o--

19 DR. REYNOLDS: And in this study, we were able to
20 access data from the U.S. EPA measurements of chemicals in
21 public water systems. This is an unregulated chemicals
22 monitoring report, so not regulated chemicals. And it is
23 available for all public water systems serving more than
24 10,000 people, and then 800 representative public water
25 systems serving 10,000 or fewer people.

1 And in this latest round of the UCMR3, they
2 included some information on some of the PFAS.

3 --o0o--

4 DR. REYNOLDS: So what we did is we took a look
5 at women that we had in our POPs breast cancer study, and
6 included data that we had on blood samples collected from
7 January 2011 through September 2013. The lab analyzed
8 them for 12 PFAS. We address geocoded all of the
9 residences where women lived at the time of blood draw,
10 and we ended up with 1,333 participants who lived in a zip
11 code with UCMR3 data on PFAS in the water.

12 And this 1,333 participants is roughly 40 percent
13 cases, and 60 percent controls.

14 We then matched them by residential zip codes to
15 the drinking water systems tested for those chemicals

16 --o0o--

17 DR. REYNOLDS: So these are the 12 PFASs that are
18 measured by the lab. In general, the detection
19 frequencies for most are quite high and body burdens
20 similar to what we see in NHANES data.

21 --o0o--

22 DR. REYNOLDS: The PFAS in water measured about
23 half of these compounds. And so we restricted our
24 analysis only to those. And as you can see, of those,
25 there are really only 4 where they actually had detectable

1 levels in the UCMR3 data.

2 --o0o--

3 DR. REYNOLDS: So the results were that we found
4 that all of the PFAS levels in -- were below the previous
5 U.S. EPA health advisories, which as you can see were
6 fairly high, 400 nanograms per liter for PFOA, 200
7 nanograms per liter for PFOS. Those are the only 2 for
8 which there was a health advisory. And this was changed
9 in May of this year to the rather strikingly lower
10 advisory level of 70 nanograms per liter for PFOA and PFOS
11 combined. In our data set, 40 percent of the women -- 40
12 percent of the PWSs of the water systems exceeded this new
13 EPA health advisory level.

14 And the results really are that women with PFAS
15 detected in their water, that is any detection, not
16 necessarily the level of detection, had 38 percent higher
17 PFOA and 29 percent higher PFOS levels in their blood,
18 which surprised us, because --

19 --o0o--

20 DR. REYNOLDS: -- there are a lot of limitations
21 to this study. So this is just giving you these data in
22 bar chart format. You can see these are significant
23 differences for PFOS and PFOA between women living in zip
24 codes with detect -- in zip codes with detected versus
25 non-detected, these analytes, and we didn't see any

1 association further. Much were rarely detected, the other
2 2 compounds.

3 --o0o--

4 DR. REYNOLDS: So this was something our
5 laboratory colleagues really pushed to do. It was their
6 idea, because this is a -- it's a topic of current public
7 policy interest, and there was a nice opportunity, and a
8 very large data set to do this. But there were a number
9 of study limitations to what we were able to do in this
10 quick analysis.

11 First of all, the method detection limits of the
12 UCMR3 data are still -- are relatively high. And so the
13 likelihood is good that PFAS could be underreported in the
14 water systems. Only 109 of our 1,333 study participants
15 lived in a residence in a zip code that was supplied by a
16 public water system that had detected at least one PFAS.

17 Some zip codes, of course -- zip code isn't
18 necessarily the optimal level of analysis. It's -- they
19 are sometimes geographically large and heterogeneous, and
20 some zip codes encompass more than one public water
21 system.

22 And, in fact, the study was not designed to
23 actually test the effect of drinking water. We had to
24 assume ingestion of home tap water, but we didn't actually
25 have data on that. This was simply a matter of living in

1 a zip code where there was a detection of one of these
2 analytes, and those women had higher body burden levels of
3 the 2 -- of the 2 compounds of interest.

4 --o0o--

5 DR. REYNOLDS: So despite that, there are some
6 study strengths here. First of all, the distribution of
7 the age, race, ethnicity, and disease status in the study
8 sample were similar across the categories of PFAS water
9 detections.

10 The majority of these women -- this is an aging
11 cohort. People are a little more residentially stable
12 with age. And 70 percent of the women lived in the same
13 address for over 15 years. This is a single occupational
14 group, so we aren't necessarily looking at a highly
15 exposed occupation or mix of occupations. And we actually
16 redid the analysis looking only at the controls and got
17 the equivalent results.

18 So, in conclusion, this was the first -- oh, I
19 only have 10 minutes left.

20 It's the first study to demonstrate an
21 association between levels of these chemicals in serum and
22 their presence in drinking water supplies, notably in a
23 population with no previously recognized water
24 contamination, and to our knowledge this is still the only
25 sort of general population study addressing this issue.

1 And so our findings are really in agreement with other
2 studies that point to the need to reduce PFAS in drinking
3 water. I just want to emphasize the associations are
4 probably underestimated here.

5 --o0o--

6 DR. REYNOLDS: Another topic is whether or not
7 these chemicals -- the levels of these chemicals are
8 changing in the population over time. This is something
9 we have just begun to look at. You have heard, I'm sure,
10 across time, a number of reports from Myrto and colleagues
11 about studies that have been done in Biomonitoring
12 California, suggesting some declines in the PBDEs.

13 And so we did a preliminary assessment in the CTS
14 POPs study. We only looked at the controls for the most
15 commonly detected compounds for the PBDEs. And that's 3
16 PBDEs and 8 PFASs. And I just want to quickly show you
17 the pictures.

18 --o0o--

19 DR. REYNOLDS: For the PBDEs, there is actually
20 no evidence to suggest a decline over the 5-year period of
21 this study for data collection.

22 --o0o--

23 DR. REYNOLDS: For the PFAS, these are fairly
24 level. And there may be some indication of some declines
25 for some of the compounds that you can see. It's not

1 necessarily uniform.

2 --o0o--

3 DR. REYNOLDS: This is something we are now
4 investigating further, not only because of the question
5 itself, but because it's something we need to evaluate as
6 we move into our risk analysis to see whether we need to
7 account for secular trends in the data.

8 So this has been a nice collaboration between our
9 group at CPIC, the DTSC Environmental Chemistry Lab, and
10 colleagues in the Teachers Study at City of Hope and UC
11 Irvine.

12 --o0o--

13 DR. REYNOLDS: So there are 2 studies that were
14 funded ancillary to the POPs study that I think might be
15 of particular interest to you. There are a number of
16 studies, one of which you heard a little bit about this
17 morning, the interesting metabolomics TOF mass spec work
18 of Samira.

19 But I wanted to just introduce you to 2 studies,
20 one is one looking at persistent organic pollutants in
21 mammographic density done by a colleague of ours at USC,
22 and second one, which is a new study, looking at the
23 menopausal transition as a window of susceptibility for
24 breast cancer.

25 --o0o--

1 DR. REYNOLDS: So we pretty much know that
2 mammographic density is associated with elevated risk of
3 breast cancer. Eunjung Lee, who is a member of our
4 steering committee got a CBCRP idea award funded to take a
5 look at whether or not the POPs levels in women in this
6 study are positively associated with higher mammographic
7 density.

8 --o0o--

9 DR. REYNOLDS: So building on the POPs study, she
10 is -- which at the time had about 1,300 women without
11 breast cancer, and detections of several of these
12 analytes, she is doing a cross-sectional study where she
13 is recruiting 160 postmenopausal women in the CTS POPs
14 study, surveying them, collecting mammograms to assess
15 mammographic density. And then we'll do the analysis to
16 address the hypothesis right now.

17 She is -- has recruited 151 participants and the
18 mammograms are currently under review.

19 So more news to come on that later.

20 --o0o--

21 DR. REYNOLDS: And a new study, that builds very
22 much on the work of the POPs study, is one that was funded
23 by colleagues at City of Hope. This is one that is
24 co-funded by NIEHS and NCI as part of their new iteration
25 of breast cancer in the environment research programs.

1 The requirements of the projects funded under
2 this initiative is that they are supposed to be
3 transdisciplinary. They are supposed to target specific
4 windows of susceptibility ability for breast cancer risk.
5 They must be designed to integrate experimental models and
6 human studies. This study includes in vitro mouse model
7 and human study elements, and it must include a community
8 outreach component.

9 The hypotheses of our colleagues is that during
10 the menopausal transition, when natural hormone levels are
11 declining, bisphenol A's and PBDEs acting as endocrine
12 disrupting chemicals promote the development of
13 hormone-responsive breast cancers, they mapped
14 individually or have additive or synergistic effects.

15 So this study is now introducing another chemical
16 into the mix, above and beyond what we had in our original
17 POPs study, the bisphenol A's. So this is a study in
18 which within the POPs cohort, women ages 40 to 58 years
19 with menopausal status at the time of blood draw are
20 included. Currently, the composition of the study is 150
21 invasive breast cancers, 97 in situ breast cancers and 416
22 controls that bridge the perimenopausal period

23 --o0o--

24 DR. REYNOLDS: And the aim for the human study is
25 to assess the effects of these several chemicals in serum

1 in the menopausal transition on total estrogenic activity,
2 after accounting for endogenous levels, epigenomic
3 changes, including microRNA and global and gene-specific
4 methylation, and ultimately in combination with all of
5 this on risk of breast cancer.

6 So these are the -- this is the cast of
7 characters included in the new City of Hope BCERP study --

8 --o0o--

9 DR. REYNOLDS: -- primarily at the City of Hope,
10 but it also includes us from the Cancer Prevention
11 Institute, and again, our colleagues from Biomonitoring
12 California and the Environmental Chemistry Laboratory.

13 --o0o--

14 DR. REYNOLDS: This particular study funded NIEHS
15 and NCI, so I hurried along, because you were going to
16 show me 5 minutes in any minute now, so --

17 (Laughter.)

18 DR. REYNOLDS: -- I just want to say --

19 MS. HOOVER: Proceed. Relax. You're fine.

20 DR. REYNOLDS: -- that regarding the California
21 Teachers Study and Biomonitoring California. So I think
22 it's been a pleasure to have an opportunity to work with
23 Biomonitoring California on this. This is not one of the
24 studies that was initiated by the Biomonitoring Program.
25 But as a collaborative enterprise, we are delighted to be

1 able to contribute data to general information on levels
2 of some of these chemicals in California women.

3 And also, the collaboration itself has been
4 extremely rich in terms of helping us think ahead, of
5 other questions, and better ways of asking questions about
6 risk relationships in California.

7 So the Teachers Study is, as I said, it's
8 statewide. We have extensive information on personal
9 health habits, health histories, and other geographic
10 attributes of where women live and have lived in
11 California. It does reflect the diversity of California
12 environments. There's enormous amount of variability in a
13 number of environmental features that we've looked at in
14 the past.

15 It is a special demographic. It's women now
16 mostly 60 years or older, but a very large sample size of
17 Baby Boomer women in California largely. This
18 collaborative effort has been valuable, because the parent
19 POPs study was funded by CBCRP and it's really provided a
20 platform for expansion via the inspirations of California
21 Biomonitoring, and other independently funded research
22 projects. It's giving us an opportunity, via this
23 collaboration, to include additional chemicals of concern,
24 and really to address additional health outcomes and
25 biologic mechanisms that may be relevant for exposures to

1 these chemicals in women.

2 So I want to just give a special thanks to
3 Biomonitoring California, not only for the involvement in
4 this study, but I've had the good fortune to have been
5 able to work with both laboratories and to work with
6 biomonitoring staff to really help think through how we
7 look at these kinds of issues and the health of women in
8 California.

9 So with that, I think that is it.

10 (Applause.)

11 CHAIRPERSON BRADMAN: Dr. Reynolds, thank you for
12 that presentation. It's really -- it's great to see how
13 both epidemiology and biomonitoring can come together to
14 support really valuable research, both in California and
15 just the field of epidemiology in general.

16 DR. REYNOLDS: Thank you.

17 CHAIRPERSON BRADMAN: So we have 10 -- as usual,
18 we have about 10 minutes for Panel questions related to
19 the presentation, opportunity for public comment, and then
20 later on some more discussion, if warranted. So are there
21 are any questions from the Panel about the presentation?

22 Dr. Schwarzman.

23 PANEL MEMBER SCHWARZMAN: Thanks so much for
24 that. It's really great to hear about the study. You
25 mentioned that the connection -- the association was

1 between presence of PFASs in the water and elevated level
2 in -- I don't know if it's, blood or serum?

3 DR. REYNOLDS: Serum.

4 PANEL MEMBER SCHWARZMAN: Okay -- in serum of the
5 women living in those zip codes. And so I assume that
6 means that for the various limitations that you discussed,
7 there wasn't a dose-response relationship. That is, you
8 couldn't quantify the levels that were in the water and
9 associated in sort of a dose-response way.

10 DR. REYNOLDS: We actually didn't attempt to do
11 that as this juncture.

12 PANEL MEMBER SCHWARZMAN: Okay.

13 DR. REYNOLDS: And the -- you know, honestly, we
14 were really surprised that it was such a striking finding,
15 given that we didn't have that precision.

16 PANEL MEMBER SCHWARZMAN: It just made me think a
17 little bit about -- obviously water is a very probable
18 source of exposure, but it made me wonder too if it's
19 potentially a marker, you know, for proximity to
20 contaminated sites and if that exposure may not be
21 exclusively via the water.

22 Anyway, do you know if there will be -- is there
23 going to be expansion of that investigation?

24 DR. REYNOLDS: Yeah, we've had a lot of
25 discussion about that. Actually, I have been talking with

1 some colleagues at the National Cancer Institute who've
2 done a lot of work on water quality and various sources of
3 exposure, not only for these contaminants, but with others
4 who are very interested in partnering with us to do some
5 follow up on that. It was not one of our specific aims
6 for the breast cancer study obviously, but it is really
7 provocative and something that I think we should follow up
8 in greater detail. We haven't had the opportunity to, but
9 I'm hoping, working with NCI, that we will have an
10 opportunity.

11 And if we do, we'll come back and tell you.

12 PANEL MEMBER SCHWARZMAN: Great.

13 CHAIRPERSON BRADMAN: Just another question about
14 possible sources. Are the tests in the water done on
15 source waters or finished water or tap water? And I'm
16 just --

17 DR. REYNOLDS: Well, it's not what you would have
18 at the tap, so it's at the source, I believe.

19 CHAIRPERSON BRADMAN: But when we say source, is
20 it already processed water in the facility before it gets
21 distributed or is it before it's gone through its
22 treatment?

23 DR. REYNOLDS: I think it -- do you want to
24 address that, Myrto or June-Soo?

25 DR. PETREAS: I'm not sure it's before if it's

1 ready to be distributed. But the key is that there is --
2 if -- a water district may have several sources. So UCMR
3 said if it's present in one source, it's called a hit. So
4 again, this is another limitation of this study, because
5 it wasn't represented through the entire volume of water
6 passing through. But if it was one hit one time, within
7 that 3-year period, it was counted. There was only one
8 sample to characterize it.

9 DR. REYNOLDS: Right. And this -- these are new
10 data, so we -- you know, we're really trying to become
11 more familiar with it. A paper that was published shortly
12 after this one in the same journal by Hu from Harvard,
13 actually was taking a look at the distributions of these
14 analytes through the United States. And what they noted
15 in their paper is that the State -- the number one State
16 with hits was California. So I think California is an
17 important place for us to be further examining this.

18 CHAIRPERSON BRADMAN: Right, and it seems like
19 the sources of this -- of the materials, is unclear at
20 this point, is that right?

21 DR. REYNOLDS: It's not -- well, you know I -- I
22 have said often that I've been avoiding trying to do
23 studies about water, because water is really complicated
24 in California. It's the -- the sources can vary in
25 different times of the year. And so just the -- the water

1 distribution systems aren't necessarily clear
2 geographically. So it's fairly complicated in a way that
3 we do need to try to track down. So this was -- it was
4 really a very crude start, but striking.

5 CHAIRPERSON BRADMAN: It just seems to me -- I've
6 had discussions about this before, but given that there's
7 a lot of concerns right now about exposures to this
8 material and that it's surprisingly widespread, maybe
9 another piece of this work or maybe, you know, an
10 ancillary piece would be to try to pinpoint where the
11 material is getting into the water systems, and if that
12 points to potential interventions.

13 DR. REYNOLDS: And in fact, we have had
14 discussions with -- do you want to comment on that at all,
15 because we have been discussing this with some of amount
16 of animation with our colleagues in Biomonitoring.

17 DR. PETREAS: Well, we think it has to do with
18 the --

19 DR. REYNOLDS: The foam.

20 DR. PETREAS -- the foam used for firefighting.
21 So different military facilities, air forces -- airports,
22 refineries, other places where these are used, but this is
23 only speculation. We tried to do GIS, tried to identify
24 where the -- within California where the -- we got a
25 geologist to see whether the wells are near downstream

1 from certain -- but the positions of the wells are secret.
2 So for security, I guess, we cannot get --

3 DR. REYNOLDS: So, I think --

4 DR. PETREAS: -- the coordinates.

5 DR. REYNOLDS: -- these are definitely, I think,
6 questions that need to be pursued. And I think, you know,
7 this is just one study, but it's happening in the context
8 now of several studies that are coming out that are really
9 underscoring that this is -- that we should -- these
10 shouldn't be things in our drinking water. So we should
11 really be pursuing this, and it's something that is
12 amenable to remediation.

13 So not all environmental factors are easily
14 amenable to remediation, but this could be something where
15 something could be done.

16 DR. PETREAS: If I can add something that given
17 that, as Peggy was saying, the guideline was lower,
18 significantly, in fact, many individual states have even
19 stricter -- I think, Virginia 16, 14 -- not 70. Our lab,
20 incidentally, is working on a method that has much, much
21 lower detection limits. So I think all the laboratories
22 were contracted by EPA to provide next round of
23 measurements -- will have to meet these very low, very
24 sensitive methods. So next time we'll have even more
25 resolution about, you know, differences in the

1 concentrations in water.

2 DR. REYNOLDS: Thanks.

3 CHAIRPERSON BRADMAN: Thank you.

4 Dr. Quintana.

5 PANEL MEMBER QUINTANA: Hi. That was a great
6 presentation. I had a couple questions. One was about
7 the POPs study, and something that's always interesting to
8 people is diet. And you have such a huge cohort. I'm --
9 potentially, I'm wondering if you've looked yet at diet,
10 like vegetarianism versus not, or that kind of thing, and
11 how it affects body burden on top of other exposures.

12 DR. REYNOLDS: It -- the short answer is we do
13 have a fair amount of dietary data on the cohort. And
14 some repeated dietary questions. Initially, back in 2010
15 when we started this, it didn't appear that for the PBDEs
16 at least, that the food chain was a major vehicle, but
17 now, this is changing. And we do intend to look at
18 some -- our dietary data, I think, will be helpful, but it
19 may not be perfect.

20 Just like with the water study, there could be
21 some timing issues, so we -- you know, in 1995, we asked a
22 very -- we used the Block Questionnaire, which is
23 extremely detailed, and a lot of our participants
24 complained that we asked so much about diet. We revisited
25 this in an abbreviated form in a subsequent survey. And

1 in subsequent surveys we've tried to ask some targeted
2 questions about particular dietary factors.

3 So it's definitely something that we do need to
4 look at in the context as we move towards risk analyses.
5 I agree, we definitely need to look at it.

6 PANEL MEMBER QUINTANA: My second question is
7 actually about a study you listed, but didn't present,
8 which was air pollution and cardiovascular risk. I
9 remember you had a study a couple -- 3 or 4 years ago,
10 showing that ultrafine particles seem to be more
11 significant than PM2.5, if I recall, or something like
12 that.

13 DR. REYNOLDS: This is a recent one, yes.

14 PANEL MEMBER QUINTANA: Or recent. That was I
15 guess -- it seemed like awhile ago.

16 DR. REYNOLDS: Uh-huh.

17 PANEL MEMBER QUINTANA: But it made me think
18 about Sara's question about how to look at diesel versus
19 non-diesel. You had that -- I presume you guys did a
20 bunch of spatial mapping and estimates of traffic
21 exposure --

22 DR. REYNOLDS: We have.

23 PANEL MEMBER QUINTANA: -- and you potentially
24 have a ready sample of participants -- can maybe even
25 resample for urine markers of diesel that are quite

1 well-characterized. It was just an idea. I was thinking
2 based on our earlier discussion, but --

3 DR. REYNOLDS: Yeah, I do think that would be
4 interesting. We've been really interested in diesel, and
5 we have been -- we have been working to characterize it.
6 We don't have a currently funded study to look at air
7 pollution. But yeah, we do have -- I think, diesel that's
8 primarily in urine. Would that be -- the metabolites
9 would be in urine. And so we have a much smaller subset
10 of samples -- of urine samples than blood samples. One of
11 our -- one of our challenges now. We have a lot of blood,
12 but not nearly as much urine, which might be important for
13 environmental studies. And then some things are more
14 transitory than others in urine obviously, so there's
15 timing issues.

16 But absolutely, diesel is something that is on
17 our wish list. It is something we really do want to
18 pursue and think that -- I think that this cohort could be
19 very helpful in terms of addressing some of those
20 questions.

21 PANEL MEMBER QUINTANA: Especially not even
22 looking at case-control, because those are very precious
23 samples. But just as -- in terms of validating the
24 exposure marker --

25 DR. REYNOLDS: Yes.

1 PANEL MEMBER QUINTANA: -- you could perhaps look
2 at controls. And it looked like you had the ability to go
3 back and recontact participants potentially. And you
4 could get a larger urine sample perhaps.

5 DR. REYNOLDS: We could. We -- you know, out of
6 quick funds. Certainly, we can.

7 PANEL MEMBER QUINTANA: No, I know. It just -- I
8 just think -- it just seems like it's such a
9 well-characterized population. Maybe you've done a lot of
10 that work already with that traffic study, that it would
11 be ready to go, you know.

12 DR. REYNOLDS: We did an earlier study where we
13 were looking at air pollution and we were interested in
14 PAHs. And so we did look at 1-hydroxypyrene assays in a
15 subsample for which we had urines, and then looked at how
16 those related to traffic patterns and computing patterns
17 and various things.

18 Fortunately, very few women in the cohort were
19 active smokers, so we didn't have the confounding effects
20 of tobacco. But I think the whole -- the whole issue with
21 diesel is something that we should try to pursue with
22 greater vigor, I think.

23 PANEL MEMBER QUINTANA: That's interesting.

24 DR. REYNOLDS: You're right. Good suggestion. I
25 can quote you on that in my next grant proposal.

1 PANEL MEMBER QUINTANA: Yes, very important.

2 CHAIRPERSON BRADMAN: We have some time now for
3 public comment.

4 MS. DUNN: Didn't get any through the email.

5 CHAIRPERSON BRADMAN: Anyone here?

6 Okay. So then I guess we have some -- a little
7 bit more time for any Panel discussion or continued
8 questions from the comments?

9 Sara, do you have one?

10 MS. HOOVER: I have a couple.

11 CHAIRPERSON BRADMAN: Okay. Great.

12 DR. REYNOLDS: You're going to ask me a question?

13 MS. HOOVER: Yeah, I'm going to ask a couple
14 questions of you guys. Question one -- just following up
15 on this. Yeah, the diesel method, the current method,
16 takes actually quite a large volume still. What, Asa,
17 it's about 10 to 30 ml was the volume required?

18 CHAIRPERSON BRADMAN: For the -- actually, he --
19 well, preferred 100 ml.

20 MS. HOOVER: Yeah.

21 CHAIRPERSON BRADMAN: But we were able to use 30
22 ml for --

23 MS. HOOVER: Closer to your mic, Asa.

24 CHAIRPERSON BRADMAN: I'm sorry. Chris Simpson's
25 method prefers 100 ml. However, for the pilot study we

1 did with kids, we ended up using 30 ml, and that was
2 adequate. I think he had to tweak his method a little
3 bit, but it is volume intensive.

4 MS. HOOVER: It's VERY low levels.

5 DR. REYNOLDS: Yeah, for our -- the little pilot
6 study that we did where we collect urine samples, we
7 collected 24-hour urines. So we had a lot of urine, some
8 of which has died in a freezer in the Health Department,
9 but we still have some left. So, you know, we could -- I
10 think it would be worth pursuing what is the -- what is
11 the minimum amount, or launching a study where we go out
12 and we collect urine. Certainly, it's easier for us to
13 get urine from people than blood, but -- although --
14 although people have really been very -- our cohort
15 members have been very cooperative and enthusiastic about
16 providing biospecimens, so it's a dedicated group, which
17 is nice.

18 MS. HOOVER: And then I had a just a question,
19 and I -- this might be for Myrto or you, but the -- in the
20 paper with the PFASs in drinking water, it was -- if it
21 was detected at all, like that was the measure, but then
22 in your -- and I took that to mean any PFAS, but you
23 actually looked specifically at the detect of a particular
24 PFAS, and the level of that PFAS?

25 DR. REYNOLDS: (Nods head.)

1 MS. HOOVER: Okay. So it was linked by that
2 specific PFAS -- not detection of any PFAS?

3 DR. PETREAS: It had to be the same, so PFOS with
4 PFOS.

5 DR. REYNOLDS: Yeah. And those were the two most
6 common.

7 MS. HOOVER: Yeah, that made sense.

8 And the next question I had for you is related to
9 the -- one of your studies you talked about where you
10 talked about the BPAs.

11 DR. REYNOLDS: Uh-huh.

12 MS. HOOVER: And I think you mean BPA analogs,
13 like -- is that what you mean or do you mean BPA
14 specifically?

15 DR. REYNOLDS: I'm going to let Myrto -- this is
16 in blood, which we never thought we would try to do.

17 DR. PETREAS: Yeah, it's BPA. One BPA, but along
18 then we do bromophenols, the same methods, so we can see
19 bromophenols.

20 MS. HOOVER: Okay. So basically your phenols
21 panel in serum is what you're talking about?

22 DR. PETREAS: Yes.

23 DR. PARK: You know, we measured BPA. Main
24 target was BPA, but we were able to -- our method, Dr.
25 Sissy Petropoulou's method can identify 3 more

1 bromophenols and also tetrabromobisphenol A and other
2 reactive flame retardants. So that's what we did, but BPA
3 only, not the analogs.

4 MS. HOOVER: And my last question, I'm just going
5 to get them all out there. I know you didn't want to say
6 much about the time trend, because it's preliminary, and I
7 think that's right at the moment where you started feeling
8 time pressure. But could you say more about like what
9 your feeling is about what you saw with those time trends?
10 I was just looking at the slides and --

11 DR. REYNOLDS: Well, we -- you know, there are --
12 there's -- there are some -- we haven't had a chance to
13 really thoroughly examine those data yet. And so one of
14 the things we really want to check before we talk about
15 whether it looks like there's any trend is we want to take
16 a look at some of the covariates. And I want to make
17 sure, for instance, that the age structure was the same
18 with time, since we know that some of these analytes --
19 body burden is higher with age, so that it's not an -- so
20 that if there is -- if we do see a trend, it would not be
21 an artifact of something that we already kind of know
22 would be associated with the particular compounds.

23 So that's one of the reasons I sort of hesitate.
24 We've really been interested in the general issue. And I
25 know that ECL has done so much work looking at these time

1 trends. And it's important to know, from a public health
2 point of view, whether there's any evidence that the body
3 burden levels are changing vis-à-vis changes in regulatory
4 activities and anything else.

5 So I think it is an important question. I
6 hesitated in a way to include it, because it is so
7 preliminary. But I also think that it's something that is
8 worth thinking about further. And certainly Dr. Petreas
9 or Dr. Park can come back to the SGP in the future when
10 we've teased this out in greater detail, and report back
11 on whether those very preliminary things look like they're
12 going on.

13 The thing that was most striking to me is, in the
14 wake of several reports of the decline over time, secular
15 declines in body burden for PBDEs, that we did not see it,
16 but this is a particular -- it's a 5-year time window.
17 Although, some of these reports have been very short
18 periods of time. It's a 5-year time window. And, you
19 know, a lot of those studies have been in breast milk in
20 younger women. And this is a somewhat different
21 demographic. So I'm not sure -- I'm not -- I don't think
22 we're sure exactly how to talk it through. And so the
23 sort of -- we didn't know whether to present something so
24 preliminary, but I think it's a little provocative than
25 we're more thinking about, so maybe we wouldn't do it in

1 the future. I don't know.

2 (Laughter.)

3 DR. PETREAS: Yeah. We were startled when we saw
4 these non-trends. We don't know. As Peggy said, we're
5 going to look more deeply into that. The other anomaly is
6 that the PFAS -- the PFNA should have been increased,
7 because this -- the declines in PFAS is -- are consistent
8 with NHANES. NHANES, over time, things have declined,
9 except for PFNA, which is what we had seen with California
10 blood, you know, a few years ago in Dr. Wang's paper.

11 So that's another anomaly. We're showing
12 declines in all the PFAS, including PFNA, which is
13 unexpected, but again, it's a different demographic.
14 Maybe shorter period of time. Who knows? Next time.

15 DR. REYNOLDS: Stay tuned.

16 MS. HOOVER: Yes.

17 CHAIRPERSON BRADMAN: Is there anyone else?
18 Martha, did you have a question?

19 DR. SANDY: Martha Sandy.

20 So this discussion just makes me think maybe if
21 you can go back to those participants and ask them some
22 questions, another questionnaire. Maybe that's too
23 expensive. But this demographic -- maybe they don't buy
24 new furniture. They lived in their house longer. They're
25 older. These are accumulating substances, but the

1 different PFOS you mentioned, maybe that's in newer
2 products, and this demographic is not purchasing those.

3 DR. REYNOLDS: We actually did have a
4 questionnaire in association with the blood draw. Its
5 primary purpose was really to assess menopausal status in
6 these women, and some factors that should be really
7 influencing breast cancer risk, but we also -- I'm sorry,
8 I took this off -- we also did ask some questions that, at
9 the time, we thought might be helpful in terms of
10 predicting body burden of the PBDEs -- about furniture,
11 and carpeting, and the year the house is built, and, you
12 know, traveling in airplanes, and doing various things
13 that at the thought -- at the time, we thought be a
14 questionnaire might be helpful and be indicative.

15 And we're -- originally, we actually did a poster
16 presentation at a meeting with the first 300 or so. But
17 we actually had an opportunity to get those questionnaire
18 data for the entire POPs sample now. And so we want to
19 reanalyze it with the much larger data set. The
20 preliminary data suggested that depends on the congener.
21 So you don't -- you're not seeing -- it's not lock-step.
22 And that's probably not a surprise, but you're not seeing
23 the same associations across the board for all the
24 congeners, which is one of the reasons we want to be
25 extremely careful in our analysis to, you know, pay

1 attention to these various -- this, and not glob too much
2 summary data together. But stay tuned, we're working on
3 that, too.

4 CHAIRPERSON BRADMAN: Any more questions?

5 PANEL MEMBER QUINTANA: A question. I was just
6 curious how many of your participants had children -- are
7 pregnant and had children over the course of your study?

8 DR. REYNOLDS: Not very many, because this is
9 the --

10 PANEL MEMBER QUINTANA: Not very many.

11 DR. REYNOLDS: -- this is -- oh, of the whole
12 study?

13 PANEL MEMBER QUINTANA: The whole study.

14 DR. REYNOLDS: Oh, the whole study. Okay. We
15 have lots of births in the whole study, starting from
16 1995. But in the POPs cohort, because this just started
17 in 2010, the women in the POPs study would have had
18 children earlier. But the age range from 40 to 94, sort
19 of, they -- this is not a particularly parous subgroup of
20 the sample, at this period in time.

21 PANEL MEMBER QUINTANA: Right.

22 DR. REYNOLDS: But we do -- and actually, we --
23 one of the NCI studies that I didn't talk about is one in
24 which we were interested in the window of susceptibility
25 around the time of the first full-term pregnancy. So we

1 linked the cohort to California birth records, and
2 actually do have data on first births, and subsequent
3 births, and cohort members who delivered in California, in
4 addition to the fact that we actually have questionnaire
5 data, where we ask them, you know, when they were
6 pregnant, and, you know, how many children they have, and
7 what year, and what the outcome of the pregnancy was.

8 So we have both birth registry data, and
9 questionnaire data to kind of get a hold -- a little bit
10 of a handle on that within the whole cohort for the larger
11 study.

12 Does that answer your question?

13 PANEL MEMBER QUINTANA: Yeah. No, I was just
14 thinking about the Kaiser Three Generations Study and
15 thinking it would be very interesting, especially for the
16 epigenetic -- with your exposure information and the
17 epigenetic data and a major route of exposure being the
18 body burden of the mom being transmitted through the
19 breast milk, would be quite interesting.

20 DR. REYNOLDS: It would be.

21 PANEL MEMBER QUINTANA: So you have a future
22 study, not that you can do everything.

23 DR. REYNOLDS: We don't have -- we don't have
24 nearly the biobank that that study has. But yes, it would
25 be. And there are lots of -- it's been a nice

1 opportunity -- sorry. There have been nice opportunities
2 over time to continue to enhance, sort of, the resources
3 that are available in this data set. And we've been very
4 lucky to have collaborators come to us and say, I'm really
5 interested in this. Can we take a look at this?

6 And so it's been -- the Teachers Study, in
7 general, has been a valuable resource, I think. And this
8 POPs study that was just one of the -- one of the projects
9 that was funded as the strategic research initiative.
10 It's taken a -- epidemiology -- it takes so long. It
11 takes so long to collect the data that you feel like --
12 along the way, you feel like, you know, I don't have much
13 to say. It's not like lab studies where you can, you
14 know, generate data within a shorter amount of time. I'm
15 so jealous of some of my laboratory colleagues in that
16 regard.

17 But, you know, now, I think we have sort of a
18 critical mass of information that begins to start to hang
19 together in ways that I think will be very productive
20 going down the road. And when I was asked to talk to you
21 a little bit about the study, I just said -- but we
22 haven't done the risk analysis. This is too early. We're
23 not going to be able to talk about that. But I hope that
24 you do find it interesting. What we are sort of doing
25 along the way and when you get updates from our colleagues

1 at the -- in the Environmental Chemistry Lab along the
2 way, see where some of this is going.

3 MS. HOOVER: So, I mean, we do have some extra
4 time. Don't take your mic off yet.

5 (Laughter.)

6 MS. HOOVER: And actually one of the things that
7 I just -- I know people are aware of Peggy's long
8 distinguished career, but some of your expertise is in
9 community engagement, participatory research, recruitment.
10 And, you know, we're just about to launch these studies,
11 community-based studies. And I just wondered if you had
12 any comments about, you know, some successes, just based
13 on your experience?

14 I mean, I know this is off the top of your head,
15 but I've just been really impressed. I mean, she gave a
16 wonderful talk about one of her studies and addressed some
17 of these issues. And it seems like an opportunity to pick
18 your brain about those kinds of things.

19 DR. REYNOLDS: That was something completely
20 different. Of course, we have a few studies that have
21 been again funded by the California Breast Cancer Research
22 Program, as part of their community research
23 collaborations. And those -- those, by design, are, you
24 know, real partnerships with the community. In each case,
25 the projects we've done have been initiated by the

1 community, not by us. So it's not scientists sort of
2 parachuting in and saying, oh, we want to study you.

3 And that is, I think, a good thing and an
4 important thing. In terms of the questions, I think it
5 can be challenging. And, as you well know, because you
6 all helped us with feedback, this earlier discussion about
7 providing individual feedback is a non-trivial and
8 difficult issue, and we've talked about it a lot.

9 I think you talked about it at the last SGP, to
10 some extent, but -- so we are -- it's very labor and
11 resource intensive to be able to -- this is just my point
12 of view, but I don't think it's unique -- to be able to
13 provide feedback to people that's meaningful and
14 contextually meaningful. You know, I can give you a
15 number, but what does that mean?

16 So to be able to talk about that -- and then in
17 this line of work, we're looking at things where we don't
18 really know what it means for health. We don't know what
19 this level of arsenic means for breast cancer risk,
20 because we haven't done that study. But it's part of the
21 community engagement and participation process.

22 So, in the other study you're talking about, the
23 Chang study, thanks to your help, Duyen's help and the
24 help of several people in Biomonitoring, we were able to
25 piggyback on some of the materials you all have developed

1 to try to put results in context, somewhat massaged in the
2 context of this particular community and their particular
3 concerns, but that was invaluable.

4 We are now in the process -- you all mentioned
5 earlier this morning, the problem of the environmental
6 sampling -- household environmental sampling. And naively
7 when we went into this, we thought, oh, we've gotten
8 through all the IRB issues for giving people back results
9 about what's in their bodies. This has got to be a piece
10 of cake.

11 Well, actually this is much more difficult,
12 because there are legal ramifications to be telling people
13 what the level of arsenic is in their tap water, for
14 instance. And so this has been a major struggle in terms
15 of doing this in a way that is faithful to the results
16 return issue, but is meaningful, but is -- our IRB
17 tortured us for nearly a year trying to figure out -- what
18 are -- how our consent forms should be formulated, so that
19 people are fully informed.

20 And just this article, I think, you mentioned the
21 EHP article that just came out. Our friends and
22 colleagues in Silent Spring sent us a preprint of the
23 article. This is the Harvard lawyer who put together this
24 very nice assessment. The conclusion of which was, well,
25 it really hasn't been tested in the courts. And so we

1 still don't really know. And so, it was a lovely article,
2 but we still don't have real resolution about how to do
3 this. And yet, this is something that with -- for
4 community studies we think is extremely important.

5 And I'm like you, if I'm in a study like this, I
6 want my results, even if you can't explain them to me.
7 But that doesn't mean that I could do that to people
8 without -- you know, I have to more responsible about it.
9 I think we have to be more responsible about it.

10 And my little plug for the -- for California
11 Biomonitoring is that I think that the time that you all
12 have invested in trying to put together those kinds of
13 materials that will speak to different community concerns
14 is very helpful. And I appreciated it as a colleague.

15 MS. HOOVER: I just wonder, I know that's been a
16 big issue. And I was also amazed because you called me
17 early on about, you know, yeah, we haven't had to address.
18 And I just wonder can you say anything, or maybe it's
19 confidential, but can you say anything about how you are
20 approaching it. Is it really just like consenting and
21 making clear like what the issues are or --

22 DR. REYNOLDS: So -- yeah, so we've finally
23 resolved with our IRB an appropriate consent form. And
24 one of the -- one of the challenges, which I'm sure your
25 attorney can appreciate is that it's different if you're

1 asking a homeowner to consent or a renter to consent.

2 So in the case of a renter, we need to bring in
3 the landlord, and it becomes a lot more complicated. And
4 it's -- it's sort of like the old -- in the early days
5 when the federal certificates of confidentiality were
6 issued, there was required language that you had to put in
7 your consent form that was this long, like, well, if
8 you're convicted of a crime, or suspected of whatever, we
9 have to -- you know, it was very off-putting language in a
10 consent form.

11 That level of detail is no longer required for
12 the federal certificate of confidentiality. But
13 similarly, for environmental sampling in the home, we have
14 to fully inform people. And we're just in the process of
15 doing this part of the study now. And there are, I will
16 say -- I don't have the data at hand, but there are a
17 number of people who are very enthusiastic about
18 participating in this study, and they gave us their
19 urines, and they want their results. And we get to this
20 part, and they read the consent form, and they go, oh, I'm
21 not sure I want to know.

22 (Laughter.)

23 DR. REYNOLDS: So I think this is a process. And
24 I will be very interested to see, along the way, sort of
25 how this gets teased out, because I think -- I just don't

1 think it's a -- it's not simple. You know, I wish it
2 were, but it's not. And so I appreciate the fact that
3 this Program is trying to start to think about that,
4 because it is the next logical step.

5 Okay. Let's look at what's in people, let's look
6 at what's in their environment. And then you get into
7 issues that are much more complex than we actually had
8 anticipated naively. Does that --

9 MS. HOOVER: Yeah. Thank you so much.
10 Appreciate the input on that.

11 DR. REYNOLDS: I don't have an answer, just
12 working on.

13 MS. HOOVER: That's good process to hear. That's
14 good for us to hear about that, because we might confront
15 that in some studies, if we decide to add on components
16 like that.

17 DR. REYNOLDS: Yeah. Oh, boy.

18 MS. HOOVER: So it's just -- I wanted to make
19 people aware of some of the things you went through in
20 dealing with that.

21 DR. REYNOLDS: This is because I've been
22 torturing my colleagues in Biomonitoring California to say
23 have you guys figured out how to deal with this?

24 (Laughter.)

25 CHAIRPERSON BRADMAN: Well, thank you. That was

1 a very interesting presentation discussion.

2 DR. REYNOLDS: Thank you.

3 CHAIRPERSON BRADMAN: So we're a little bit ahead
4 of time. I'm wondering maybe we should move on to the
5 next agenda item?

6 MS. HOOVER: No, we should take --

7 CHAIRPERSON BRADMAN: Take a break now.

8 MS. HOOVER: -- take a break now, and -- I think,
9 right? Are you -- how are you feeling?

10 THE COURT REPORTER: I'm okay if you want to move
11 on.

12 MS. HOOVER: All right. Laurel, are okay with --

13 DR. PLUMMER: A quick break.

14 MS. HOOVER: A quick break. Okay. Let's do the
15 quick break, 15-minute break.

16 CHAIRPERSON BRADMAN: Okay. So we have a
17 15-minute break. Why don't we make it 10 --

18 MS. HOOVER: No, 15 for the transcriber.

19 CHAIRPERSON BRADMAN: Oh, okay.

20 MS. HOOVER: So let's just keep it at 15.

21 CHAIRPERSON BRADMAN: Okay. So then we'll see
22 everyone back at --

23 MS. HOOVER: 3:02.

24 CHAIRPERSON BRADMAN: Yeah, Just after 3:00, so
25 get here at 3:00.

1 MS. HOOVER: Yeah.

2 CHAIRPERSON BRADMAN: Okay.

3 (Off record: 2:47 p.m.)

4 (Thereupon a recess was taken.)

5 (On record: 3:02 p.m.)

6 CHAIRPERSON BRADMAN: Okay. We'd like to
7 reconvene for the afternoon. It's time to start heading
8 back to your seat of preference. I think we're -- oh,
9 great. We're -- I think we can get started now. I'll
10 take this time to introduce Dr. Laurel Plummer, who's a
11 staff toxicologist in the Safer Alternatives Assessment
12 and Biomonitoring Section with OEHHA for now --

13 (Laughter.)

14 CHAIRPERSON BRADMAN: We'll miss you.

15 DR. PLUMMER: Thank you.

16 CHAIRPERSON BRADMAN: -- who will present a brief
17 summary of information relevant to 2 possible classes of
18 chemicals used in -- for UV application, benzophenones and
19 phenolic benzotriazoles for future consideration as
20 potential designated chemicals.

21 And I just wanted to clarify, are we going to be
22 voting on these today or is this really just about
23 discussion -- about consideration?

24 DR. PLUMMER: Yeah. So today is just a
25 discussion item. It's like a preliminary screen.

1 CHAIRPERSON BRADMAN: Right. Okay.

2 DR. PLUMMER: So just to kind of put some of
3 these ideas out there. And then, you know, at a future
4 date you can -- at the end you can propose an approach,
5 whether you'd like to pursue designation for one or both,
6 and I'll go into those options at the end.

7 CHAIRPERSON BRADMAN: Okay. Thanks.

8 (Thereupon an overhead presentation was
9 presented as follows.)

10 DR. PLUMMER: So I'll just start off by letting
11 the Panel know, and also the folks on the phone, there was
12 a document posted on the website. There's also a copy in
13 your folder materials that you have there on your desk.

14 So today, I'm going to be talking about some
15 information I've gathered on 2 specific classes --
16 possible classes of chemicals that are used in UV
17 applications. And so I'll just switch to the next slide.

18 --o0o--

19 DR. PLUMMER: So the next slide. The purpose of
20 the agenda item today is to discuss these classes, which
21 we're defining UV applications as uses, including as UV
22 stabilizers, UV absorbers, or photoinitiators. These 2
23 classes you can see here are benzophenones and phenolic
24 benzotriazoles. And today, we're just looking to obtain
25 input from the Panel and the public on next steps

1 regarding these possible classes.

2 --o0o--

3 DR. PLUMMER: Okay. So next slide.

4 So why classes?

5 We are applying the approach of looking at
6 chemical classes in this research, as we have done before,
7 and you heard the talk from Dr. Shoba Iyer in July about
8 possible classes for pesticides. So you can think about
9 this as sort of a parallel stage of looking at these
10 possible classes.

11 So our reasons for taking this class approach,
12 looking at chemical classes or groups, rather than
13 individual chemicals -- is resource efficient for chemical
14 selection in the Program. It allows the Program to
15 quickly respond to shifts in chemical use, and target
16 emerging chemicals of concern.

17 It's also beneficial from a lab perspective
18 looking at development of broad lab panels for classes of
19 related chemicals. And also, as we heard a little bit
20 from Jianwen about the non-targeted screening work, it's a
21 good approach to screen within a class of chemicals.

22 --o0o--

23 DR. PLUMMER: All right. So the next slide,
24 slide number 4. This slide is just to provide you -- to
25 provide everyone some background on the criteria for

1 recommending designated chemicals. And even though today,
2 we're not at that stage for these groups, this bulleted
3 list gives us an idea of the types of topics we research
4 in our screening -- screening work. And so it relate --
5 the research we do definitely relates to these criteria
6 that are listed here.

7 And the work includes looking at chemical
8 identity and structure, use and production, and I'll just
9 switch to slide 5.

10 --o0o--

11 DR. PLUMMER: Detections in humans, biota, and
12 the environment, looking at information available on
13 bioaccumulation and persistence and also on toxicity.

14 --o0o--

15 DR. PLUMMER: Okay. So slide 6.

16 So during my research, you know, there's quite a
17 lot of work that's done on chemicals that are used as UV
18 -- in UV applications. And for the work that I did, you
19 know, I uncovered a lot of information about some other
20 classes, which I have listed here, and compounds. So
21 para-aminobenzoates, avobenzene, which is a single
22 compound, cinnamates, and salicylates.

23 So there are some other classes that do come up
24 in the literature, but we chose to focus on benzophenones,
25 and phenolic benzotriazoles, for a number of reasons,

1 which includes laboratory capability, the extent of use,
2 and then also interest by other scientific agencies.

3 So I have gathered some information on these, but
4 it's not included in today's talk.

5 --o0o--

6 DR. PLUMMER: So slide 7. So, first, I'll
7 discuss the group benzophenones. These are used in
8 sunscreens and other personal care products. They're used
9 in plastics, including food contact materials, paints and
10 coatings, inks and lacquers for paperboard. They're also
11 used in fragrances and in pesticide formulations. So
12 quite a broad range of specific uses, but all related to
13 their UV stabilizing properties.

14 Benzophenones have the core structure of a ketone
15 attached to 2 phenol groups and they can have various
16 substituents attached to the phenol rings. You can see 4
17 examples here. And benzophenone-3, which is shown in the
18 top left, is already on the list of designated chemicals,
19 and that's because it was on the list for CDC, so it's
20 automatically added to our list.

21 --o0o--

22 DR. PLUMMER: Okay. So we looked, as I
23 mentioned, into production and import volume in the U.S.
24 And this information is from -- is information compiled by
25 the U.S. EPA. So you can see 2 -- 2 example chemicals

1 DR. PLUMMER: Okay. So next slide, slide 9.

2 We have -- there are several -- many
3 environmental studies that have detected BP-3 in U.S.
4 residents in U.S. studies, and notably higher levels have
5 been found in Californians, including the recent
6 Biomonitoring California publication reporting elevated
7 BP-3 in firefighters. So that was a recent report. The
8 other benzophenones listed here, including BP-1, BP-4 were
9 detected at low levels in urine. And I'll just point out
10 here too that in addition to BP-1 being a BP-3 metabolite,
11 BP-2 and 8 are also metabolites of BP-3. So there's a lot
12 of interrelatedness in this group.

13 In terms of detections in other biospecimens,
14 BP-4 was quantified in 58 percent of placental tissue
15 samples collected from volunteers in Spain, which is
16 pretty interesting. They -- and you can see it was also
17 detected in urine.

18 And in addition to BP-3 being detected in urine,
19 it was also detected in serum, breast milk, and adipose
20 tissue. And I'll just note here that BP-3 has a log Kow
21 of 3.79, which is close to the cut-off of 4 that is used
22 by OEHHA as an indicator of potential for bioaccumulation.

23 And there's some more information about the
24 different parameters in the table in the document that you
25 received.

1 --o0o--

2 DR. PLUMMER: All right. So next slide, some
3 toxicity information that we located for chemicals in this
4 group are highlighted here. So benzophenone is listed
5 under Proposition 65 as known to the State to cause
6 cancer. Several benzophenones have been reported to
7 exhibit estrogenic, anti-estrogenic, and/or
8 anti-androgenic activity both in in vivo and in vitro
9 assays.

10 And we also consulted, with the help of Dr. Shoba
11 Iyer -- looked into U.S. EPA's, ToxCast database. You
12 heard a little bit on that during her talk in July on the
13 pesticides. And this database displays chemical-specific
14 results from high-throughput assays. And we looked at
15 that for available bioactivity data for benzophenones.
16 And several benzophenones were positive in assays
17 evaluating the endpoints listed here: Endocrine activity,
18 cell viability, cellular metabolism, and then immune- and
19 inflammation-related effects.

20 --o0o--

21 DR. PLUMMER: All right. So with that, I'll
22 switch to the next group of compounds, phenolic
23 benzotriazoles. And this slide shows example chemicals in
24 this group. These are used as UV stabilizers in plastics,
25 and many are approved by the FDA for use in food contact

1 materials. Experimental studies have also highlighted
2 potential for migration of UV P, which is also called
3 commonly drometrizole, and study -- experimental studies
4 have shown that that compound can migrate from high
5 density polyethylene plastic into milk and food simulants.
6 So there's some indication of migration there.

7 And some phenolic benzotriazoles were identified
8 as being found in a small study of plastics from
9 electronic equipment, so the plastic casings. And it was
10 a fairly small study, but still, you know, an indicator of
11 use there. And you can see these compounds have a
12 heterocyclic ring that contains 3 nitrogen atoms and then
13 a phenolic group with varying substituents. So UV P is a
14 fairly small compound, and then ranging all the way up to
15 some of these other ones shown here, 234 and 328, that
16 have additional rings and branching.

17 --o0o--

18 DR. PLUMMER: So looking at the U.S. import --
19 production/import volume for this group of chemicals, we
20 can see that 2 of the ones highlighted for this research,
21 and in the document, had high-production volumes. So UV
22 234, which I showed on the previous slide, was 1 to 10
23 million pounds, and UV 328 was over 2 million.

24 And you can see similar patterns of some
25 compounds being withheld as well by -- as confidential

1 business information.

2 --o0o--

3 DR. PLUMMER: So we also looked at the log Kow
4 and bioconcentration factor information. And I've just
5 summarized it in this slide here. There's also more
6 information in the document. You can see that many of
7 these compounds have concerns for persistence and
8 bioaccumulation, again based on OEHHA's Green Chemistry
9 Hazard Trait regulations.

10 And in addition to that, UV 327 and 328 have been
11 identified as very persistent and very bioaccumulative by
12 the European Chemicals Agency.

13 --o0o--

14 DR. PLUMMER: In terms of biomonitoring --
15 available biomonitoring data, we located a study looking
16 at levels of several phenolic benzotriazoles in a study of
17 breast milk. And this is published in 2015, so it's
18 fairly recent, and -- but the samples were collected in
19 2011. We -- they -- the study reported the highest levels
20 were found for UV 328, which I've highlighted here.
21 Ninety-eight percent detection frequency for that
22 compound, with an average of about 64 nanograms per gram
23 and a maximum of 334.

24 And in this same study, the researchers looked at
25 the fragrance chemical tonalide, which I have at the

1 bottom of this slide, which is actually a designated
2 chemical for Biomonitoring California. It's a synthetic
3 musk. And the authors noted the similarities in the
4 average levels detected, and also the maximum for these 2
5 compounds.

6 --o0o--

7 DR. PLUMMER: Phenolic benzotriazoles have also
8 been detected in studies of biota. UV 328 was detected in
9 plasma in a very small study of dolphins in Florida.

10 UV 327 and UV 328 were found in a separate study
11 looking at porpoise blubber collected in Japan. And a
12 number of studies have detected phenolic benzotriazoles in
13 aquatic organisms including fish, mussels, and some other
14 intertidal species. And specifically, in a small study of
15 blue mussels collected from the U.S. Pacific coast, in
16 2004, 2005, around then, UV 326, 27, and 28 were reported
17 as being found.

18 --o0o--

19 DR. PLUMMER: Overall, there's very limited
20 toxicity information on the phenolic benzotriazoles group
21 with regard to human exposure, toxicity, or even, you
22 know, pharmacokinetics. However, the National Toxicology
23 Program is conducting studies on several chemicals in this
24 class. And there's information available on their website
25 related to the studies being conducted, but they are

1 looking at toxicokinetics and genetic toxicity for several
2 compounds in the group.

3 A few published studies report indications of
4 anti-androgenic activity and activation of the aryl
5 hydrocarbon receptor pathway for some benzo -- phenolic
6 benzotriazoles.

7 And we also consulted ToxCast for information on
8 chemicals in this group as well. And they were found to
9 have -- several were found to have positive results in
10 assays that evaluated endpoints related to endocrine
11 activity, aryl -- AhR pathway activation, xenobiotic
12 metabolism, cell proliferation, again immune- and
13 inflammation-related endpoints.

14 --o0o--

15 DR. PLUMMER: All right. So basically the
16 options for the Panel today:

17 You know, we can discuss these groups, and the
18 Panel can request that OEHHA prepare a potential
19 designated chemical document on one or both of these
20 classes that we have researched and presented today.

21 You can propose further screening or continued
22 tracking of one or more of the classes, advise no further
23 action, or if you have other suggestions for possible
24 classes we should go back and look at more, we're open to
25 that as well.

1 So with that, I will take any questions.

2 CHAIRPERSON BRADMAN: Any questions from the
3 Panel?

4 PANEL MEMBER MCKONE: So the production volumes
5 that you had, those are quite large, but these are not
6 all -- I mean, that doesn't relate to what's used as
7 sunscreen, right? We're really -- I mean, we're -- these
8 are compounds that are often used in sunscreen
9 applications, but I'm --

10 DR. PLUMMER: Yeah, yeah.

11 PANEL MEMBER MCKONE: Is there some way of
12 figuring out what fraction of that actually ends up on
13 consumers, and what part is used in other types of
14 applications.

15 DR. PLUMMER: I wish. I wish there was. I mean,
16 especially because a lot of the benzophenones are used for
17 both applications. And, in fact, we know benzophenone is
18 really -- you know, it's widely used, but it actually
19 doesn't -- or it's -- you know, there's evidence of
20 exposure. But when you look at the production volume,
21 it's not -- it doesn't really appear to be parallel.

22 PANEL MEMBER MCKONE: I mean, again, it
23 doesn't -- I don't know about our decision, but it does
24 reflect a very interesting question of when we've -- you
25 know, if results indicate high levels in blood, is it

1 coming from people applying it, or, you know, food
2 residues, or hand-to-mouth activity because it's in
3 consumer products --

4 DR. PLUMMER: Exactly.

5 PANEL MEMBER MCKONE: -- and that might be hard.
6 Okay.

7 DR. PLUMMER: And I didn't talk much about it
8 here, but there have been studies that look at levels of
9 both of these chemical classes in dust. And the levels
10 are relatively low compared to some of the standard
11 compounds we do worry about as being in dust, PBDEs and
12 some of the other persistent things, but it seems like
13 there are more and more studies being done to kind of look
14 at, you know, levels in the environment and in the indoor
15 environment as well.

16 PANEL MEMBER SCHWARZMAN: Obviously, these
17 compounds have lots of uses and they're strikingly varied
18 uses. I think it's uncharacteristic actually to have
19 compounds that have such a wide variety of applications.
20 But because one of the primary applications of the
21 benzophenones at least is in sunscreen, what does the FDA
22 have to say about this? Is there any -- or does it fall
23 under cosmetics, and so they're not regulated in that
24 sense by the FDA?

25 DR. PLUMMER: Right. That's a great question.

1 So there are -- gosh, I believe it's just under 20
2 approved sun -- active sunscreen ingredients. And some of
3 the benzo -- so benzophenone-3 is on that list,
4 benzophenone-4, which is called also sulisobenzone, so you
5 could see that. Benzophenone-3 is oxybenzone on, you
6 know, a label.

7 So there's -- I think by virtue of saying these 2
8 are okay as active ingredients, they're basically saying
9 it's okay. And some of the -- some compounds were from
10 some of the other classes that I didn't go into detail in
11 for this particular research, are also on the list of
12 approved substances.

13 So they regulate it by percent of the whole total
14 of ingredients. I think it's -- you know, ranges
15 sometimes up to 10 percent, depending on the compound. So
16 that's one way they do try to limit the amount that could
17 be added.

18 CHAIRPERSON BRADMAN: So the laboratory here is
19 already measuring BP-3.

20 DR. PLUMMER: They are, yeah.

21 CHAIRPERSON BRADMAN: And maybe that's not for
22 discussion today, but is -- if we were to designate this
23 as a class, in terms of analytical methods, would it be
24 relatively easy or, you know, un -- less complicated to
25 extend the analysis to this class using existing methods?

1 DR. PLUMMER: I mean, I could let Jianwen
2 elaborate a little more if he wants to, by I think it
3 seems like that would be the case to me.

4 DR. SHE: I think -- and like the few ones we
5 mentioned here, BP-1, BP-2, BP-4, and also you mentioned
6 the BP-8. And although that's low reportable, the BP-12,
7 I think it's relatively easy to enter a method. But I
8 also like introduce Dr. Yu-Chen Chang, she's working on
9 it, if you have any comments or -- okay.

10 She's possibly agrees with me, I hope.

11 (Laughter.)

12 CHAIRPERSON BRADMAN: Dr. McKone.

13 PANEL MEMBER MCKONE: So the category is broadly
14 UV-absorbing chemicals, right?

15 DR. PLUMMER: That was essentially what shaped
16 the research, and where it sort of -- you know, it evolved
17 from the concern over BP-3 having high levels, and, you
18 know, as we found in the firefighters study. But when we
19 actually look at the group, it's not going to be -- when
20 it's listed, you know, potentially in the future, it will
21 just be benzophenone, so we won't actually have, you know,
22 a specific use associated with it, partially because, you
23 know, we understand they are used to prevent degradation
24 of plastics or a wide variety of things, but I think just
25 keeping the class, you know, chemical structure-focused is

1 the approach that we're leaning towards.

2 PANEL MEMBER MCKONE: So my other question is
3 that people are going to look at this some day and say
4 what about other sunscreen agents, like the zinc oxide,
5 titanium oxide? Is there -- I mean, part of it is they
6 may be very difficult to detect, but leaving them off
7 almost implies that there's no interest in those.

8 And I'm assuming there's interest and they may be
9 not there, because, A, they're considered not toxic, or B,
10 they're too difficult to analyze.

11 DR. PLUMMER: Yeah. I think -- so I mentioned,
12 you know, a couple of the reasons why we chose these 2
13 groups. And they really rose to the top for the reasons
14 that I mentioned before, not because there isn't -- not
15 because there isn't research being conducted or even, you
16 know, some of -- some compounds in the other groups I
17 mentioned on an earlier slide, they have measured those,
18 you know, in the environment, things like that. But I
19 think that could be something down the road to look at,
20 but these 2 really rose to the top in terms of the various
21 factors of laboratory capability, and also interest by the
22 NTP in studying the phenolic benzotriazoles group.

23 So I think, you know, there is -- I don't mean to
24 imply there isn't interest or information on those other
25 classes and compounds, but especially looking at, you

1 know, ability to biomonitor was another thing we focused
2 on.

3 CHAIRPERSON BRADMAN: Sara.

4 MS. HOOVER: Yeah, that's -- I completely agree
5 with what Laurel said, but I really want to emphasize that
6 we are not addressing all chemicals used in UV
7 applications. That's not the point of this item, and we
8 have not vetted everything and said these are the 2 top.
9 No way.

10 It's just, you know, Laurel has actually been
11 researching this for over -- over a year, I would say,
12 right --

13 DR. PLUMMER: Um-hmm, yeah.

14 MS. HOOVER: -- looking at the literature. We
15 called it preliminary screening information. So any
16 thoughts about other classes you'd want us to focus on?
17 These are the 2 we chose, but it's not saying that these
18 are the only 2 that would be of interest, absolutely.

19 DR. PLUMMER: I think Oliver had a question.

20 CHAIRPERSON BRADMAN: Why don't we take one more
21 comment from the Panel, and then we'll have some time for
22 public comment, and then also following that, more
23 discussion. Thanks.

24 PANEL MEMBER FIEHN: This morning, we heard about
25 chlorinated benzophenones, but they didn't show up in

1 these preliminary overviews. Are these used for different
2 purposes or --

3 DR. PLUMMER: So you're right. That's true. And
4 I noticed that when I saw Jianwen's slides that focus on
5 the chlorine. And none of those came up in my -- from my
6 perspective that I was looking at the research, but --
7 that's out there, but there is quite a long list of
8 compounds. Methylbenzophenone is one of them.

9 Benzophenone -- that have specific uses in -- as inks for
10 food packaging, like the paperboard cardboard. There
11 is -- I mean, I found -- I think Sara actually found a
12 website that just listed more than I could, I mean,
13 process really, just all kinds.

14 And I didn't -- that's one place maybe where the
15 chlorinated things are used, but I don't know, you know,
16 what their specific use is, but that would be of interest
17 for sure to continue looking into. I think most of the
18 ones in the list that we found for food packaging, I
19 looked -- I checked them for the use in the U.S. EPA
20 database, and there wasn't -- there just -- it was kind of
21 like a dead end in terms of the information available on
22 those. So, you know, I didn't pursue that in detail, but
23 that's a good question.

24 CHAIRPERSON BRADMAN: Why don't we take a few
25 minutes for public comment. Veena Singla from NRDC.

1 Thank you.

2 DR. SINGLA: Good afternoon. Thanks so much for
3 a very interesting presentation. And I wondered to what
4 extent if you knew chemicals from either one of the
5 classes might be used in gel nail polishes or gel nails as
6 photoinitiators? I know photoinitiation is one of the
7 functions mentioned, because it's definitely a -- gel
8 nails are becoming very popular and could represent
9 widespread exposure potential.

10 DR. PLUMMER: Yeah, that's a really good
11 question. So in looking at, you know, how some of these
12 compounds are used, I really -- I looked kind of
13 anecdotally at the Environmental Working Group's Skin Deep
14 Database. And BP-1 like -- you know, there were pages and
15 pages of, you know, 1,700 products. And many of the
16 top -- I didn't go through every page, but many of the top
17 were nail polish uses actually.

18 I like your point about the gel specific use, but
19 I didn't go -- I didn't like really investigate which type
20 of nail polish they were, but it's definitely a
21 possibility. And that's -- you know, that's a huge, you
22 know, use out there. So, yeah, it's a really good point.

23 CHAIRPERSON BRADMAN: Are there any comments by
24 email?

25 MS. DUNN: None.

1 CHAIRPERSON BRADMAN: No. Okay. Then I guess we
2 turn the discussion back over. We still have a fair bit
3 of time, if there's anymore questions and comments.

4 Dr. Quintana.

5 PANEL MEMBER QUINTANA: Hi. I was wondering if
6 you could comment on why the NTP Program chose the
7 phenolic benzotriazoles to study? What was the
8 precipitating event?

9 DR. PLUMMER: I believe it was NIEHS came to --
10 like proposed it as a class. And they really did kind of
11 a similar approach to what I did, which is, you know,
12 looking at the extent of use, seeing how several are high
13 production volume chemicals, kind of citing the different
14 parameters that make -- that give them bioaccumulation,
15 persistence concerns.

16 So it's -- you know, there's -- they're already
17 going with some of the studies. And so hopefully, we'll
18 start to see their results and their reports come out, at
19 least between now and when the document or potential
20 document would be worked on, so it will have more
21 information, especially in different animal studies, and
22 understanding the pharmacokinetics, and maybe where, you
23 know -- maybe the phenolic benzotriazoles could be
24 measured in serum or, you know, other more -- like the
25 samples that Biomonitoring California uses, since there is

1 indication of exposure in the breast milk for those
2 compounds.

3 MS. HOOVER: And, Laurel, I'll just add, you
4 perfectly summarized the reason for nomination. I just
5 pulled it up on -- yeah, on the website. High production
6 volume, used as UV stabilizers in a wide variety of
7 industrial and consumer products, possess physicochemical
8 properties that suggest persistence in the environment and
9 potential to bioaccumulate, limited toxicological data,
10 yet reproductive and developmental effects data for
11 several class members suggest potential hazard.

12 So essentially what got it on our radar -- and in
13 fact it was pretty interesting, because it came on
14 Laurel's radar just from the lit review and for those
15 reasons, and then we found the interest that NTP had
16 flagged. So then we saw we were on the right track for
17 flagging this class.

18 CHAIRPERSON BRADMAN: So I think if there's not
19 anymore discussion, I think it behooves us to really, as a
20 Panel, decide whether we want to make a specific
21 recommendation in terms of follow up on this as a possible
22 designated chemical.

23 More questions?

24 PANEL MEMBER SCHWARZMAN: No, I was just going to
25 make a comment on that.

1 CHAIRPERSON BRADMAN: Oh, sure. Go ahead.

2 PANEL MEMBER SCHWARZMAN: Sure. Yeah. I mean,
3 it strikes me that we don't have to decide that this is
4 the only class of chemicals worth pursuing in this use to
5 recommend that it's worth pursuing further. So in a way,
6 I think that might be worth separating those questions,
7 you know, if whether there are other interesting classes.
8 And it strikes me that this class kind of meets a whole
9 bunch of the criteria between production volume, and
10 potential toxicity, and demonstrated either physical
11 chemical properties that would indicate potential exposure
12 and some evidence already of exposure, and almost in that
13 sort of particular window between knowing enough to make
14 it clear that it's worthwhile, and not knowing so much
15 that it's sort of like icing on the cake to find out more.

16 So with that kind of summary of my thinking of
17 it, I guess I would like to make motion if we -- I don't
18 know that -- we don't need a formal decision-making
19 process, but I would support further investigation of
20 this, as a -- you know, preliminary to creating it as a
21 designated chemical.

22 CHAIRPERSON BRADMAN: Adopting option 1.

23 PANEL MEMBER SCHWARZMAN: Yes, option 1.

24 CHAIRPERSON BRADMAN: Okay. Thank you. I should
25 say for myself, too, that I couldn't have said it nearly

1 as well as Dr. Schwarzman just did, and she reflects my
2 views as well there.

3 PANEL MEMBER MCKONE: So I'm strongly inclined to
4 agree, I mean, that this should -- that it would be nice
5 to move forward.

6 I don't know, I think it would be nice to also
7 suggest that we look at other -- you know, that some work
8 begin on looking at the other UV screens that people use.

9 DR. PLUMMER: Right, like continue tracking.

10 PANEL MEMBER MCKONE: And the reason I bring that
11 up is I know that you have a process for looking at these.
12 But when it goes out to the public, there's often an
13 implicit sort of interpretation that you're ranking and
14 saying these are -- you know, people are going to say, oh,
15 they're looking at these sunscreens, so I'm going to use a
16 different one, because the State is looking at those, they
17 must be bad.

18 DR. PLUMMER: Right.

19 PANEL MEMBER MCKONE: I know that's not the
20 intent, but that happens -- so I think just for, you know,
21 the broad interest of consumers and public health that
22 there also be some other activity, you know, just to begin
23 screening feasibility for other classes of sunscreens. So
24 I don't know if that's a separate recommendation or an
25 amendment.

1 MS. HOOVER: Yeah. Let me just clarify before
2 you go off into this land. So this is preliminary input.
3 No voting. What we want to hear is of these 2 classes --
4 and I'm not making you pick one this time, so I'm saying
5 both. If you're interested in both, we'll do documents on
6 both. If you say no, no we're really interested in
7 phenolic benzotriazoles, do that first, you can give us
8 that kind of recommendation.

9 As we said, you know, further screening or
10 continued tracking clearly -- so that's what you're
11 proposing, a broader screening of more categories of UV
12 chemicals used in UV applications. So all of those -- you
13 know, we're just -- we're going to gather, you know, even
14 individual Panel member input and figure out what to do.
15 It doesn't have to be a formal recommendation.

16 PANEL MEMBER MCKONE: So I just want to
17 emphasize, I'm saying I favor going forward on documents
18 for both classes. But also, if there's time and resources
19 to begin -- you know, not to hold off on those, but move
20 ahead on that, but also invest some effort into screening
21 some of the other sunscreens.

22 So at another meeting when the question comes up
23 and somebody says, oh, you guys ignored the broader
24 classes. Well, you know, these are the ones that -- I
25 agree, these came up first. They're important. We need

1 documentation on them. And it shouldn't be held up, but
2 we should also be able to answer -- you know, I mean not
3 we, but the State should be able to say, yes, we're
4 looking at other sunscreens and UV --

5 MS. HOOVER: Yeah, and let me just follow up on
6 your comment a little bit, because it is true we have a
7 process now. And we added this new step actually to get
8 exactly this kind of input from the Panel. Like before we
9 go to a full document, we want to make sure what do you
10 guys think?

11 And then behind any full documents we're working
12 on, there's preliminary screening that's going on. So
13 you're recommending that we keep our focus in this
14 category of chemicals is actually what you're saying.

15 PANEL MEMBER MCKONE: Yeah, the broader category
16 of chemicals and move forward in the 2 classes that you're
17 already ready to move on and give us documents to look at.

18 MS. HOOVER: Understood.

19 DR. PLUMMER: Thank you.

20 CHAIRPERSON BRADMAN: Any other comments, Panel?

21 PANEL MEMBER SCHWARZMAN: I guess I just have one
22 thought echoing something that Dr. McKone was just saying.
23 I have less interest I think in the titanium dioxide and
24 zinc oxide investigation, but they might still stay on the
25 radar. I mean, there's so much known already about -- but

1 the key considerations there are occupational exposure to
2 particulate -- you know, to particulate form of the
3 compounds.

4 But I'm interested in this list you gave us at
5 the beginning, it's on slide 6 --

6 DR. PLUMMER: Right.

7 PANEL MEMBER SCHWARZMAN: -- of the other
8 compounds used in UV applications. And I appreciate Dr.
9 McKone's sort of impulse in this direction. It almost
10 accomplishes at a different level what you try to
11 accomplish in addressing chemical classes. And it has to
12 do with the sort of moving targets as pressure is put on
13 one type of compounds -- one class of compounds used in a
14 particular application or for a particular function, the
15 tendency of the market to just bulge into another
16 direction.

17 And here, we're not capturing all of those just
18 by doing a class approach, because there are other
19 compounds in other classes --

20 DR. PLUMMER: Yeah, exactly.

21 PANEL MEMBER SCHWARZMAN: -- that are used in
22 those applications. So I think it does particularly
23 support the approach of keeping an eye on or doing some
24 preliminary investigation of some of the other compounds
25 used in these applications.

1 DR. PLUMMER: Exactly. And I -- you know, I did
2 actually do kind of more -- in looking at the whole scope
3 of literature, in some cases they'd look at a few
4 benzophenones, they'd look at a few phenolic
5 benzotriazoles, they'd throw in some cinnamates and
6 salicylates. And what happen -- what kind of happened is,
7 as you start to distill the information is, there's 1 or 2
8 compounds in some of the other classes. So there are --
9 you know, it's a smaller class, and maybe not used so much
10 in the U.S. or not approved for use in sunscreen
11 applications.

12 So we have -- you know, it's definitely something
13 that could continue to be tracked, because we have the CAS
14 number information, we have already gathered, you know,
15 historical production volumes, and, you know, whatever is
16 available on-line. So that kind of task -- it's already
17 actually kind of underway. So just behind the scenes, and
18 it's not -- you know, not being -- didn't rise to the top
19 for this particular meeting, but we still have, you know,
20 some preliminary information on chemicals in those classes
21 as well.

22 MS. HOOVER: And I think actually what I would
23 propose to add on is given the broad interest, I would
24 probably say that instead of even doing the level of depth
25 that we did on this preliminary screen, that we would take

1 it even at a higher level and try to give more in -- a
2 little bit of information on more classes, just to get a
3 little bit of a broader picture, and then narrow it down,
4 because, you know, these two were pretty easy to pick out,
5 but going to the next layer, I'm not sure. So we could --
6 we could bring something like that back to you.

7 PANEL MEMBER MCKONE: Right. I mean -- and
8 again, I was not pushing for just zinc and titanium oxide.
9 Just -- I used it as an example. But I think it would be
10 interesting, even at -- just to see some use patterns,
11 like which ones are going up, which ones are going down,
12 because I think it affects where you want to put your
13 resources.

14 If a certain chemical is really disappearing from
15 the market, it might not be worth doing a lot of effort.
16 I mean, the reason I thought of the oxides is that they're
17 just rising. I mean, everyone recommends them if you go
18 to these websites, oh, these are the best. And that's --

19 DR. PLUMMER: Well, I think the difference
20 between the -- just to clarify that -- like the ones
21 you're referring to, those are actually -- they have a
22 different way of preventing, you know, skin -- effects to
23 the skin damage, so they physically block. Whereas, these
24 are kind of chemical blockers, so they do -- that is sort
25 of a distinction that is in sunscreens, at least, you

1 know, physical sunscreens that people use. Those are --
2 that's kind of a different animal is the -- those physical
3 blockers versus the chemical blockers.

4 PANEL MEMBER MCKONE: Yeah, they both keep UV
5 light from transmitting to the --

6 DR. PLUMMER: Yeah, in different ways.

7 PANEL MEMBER MCKONE: -- stratum corneum. So
8 it's just how they do it.

9 DR. PLUMMER: Right, exactly.

10 PANEL MEMBER MCKONE: I mean, they're different
11 binding mechanisms, but they're all effectively blocks of
12 UV light in the sense that they're opaque. You're trying
13 to get something in your skin that is opaque to UV light.
14 And, you know, you can do it many different ways.

15 MS. HOOVER: I feel compelled to follow up a
16 little because I think what Laurel was pointing to is that
17 the concern -- people are more concerned when you're
18 talking about a chemical -- you know, a chemical, reactive
19 kind of UV stabilizer versus a physical blocker, which is
20 why people are recommending, you know, physical blockers.

21 Now, I think we could do something like where
22 we -- it's almost like a slightly more developed fact
23 sheet where we look at the different classes and say
24 something about them, and the nature of them, and the
25 kinds of uses. We could start with something like that.

1 And I'm also kind of inclined -- also following
2 up on something Laurel pointed out that this is old
3 production volume data. I mean, it's a nice idea to say,
4 you know, come back with trends and tell us what's going
5 on -- up and down. You know, we don't have that level of
6 information, so the kind of thing we're talking about now
7 might be better suited to occur after the next set of EPA
8 data come out on import production volume, not for these 2
9 classes, but for the other classes.

10 And I want to clarify one other thing, I still
11 want to hear from each Panel member about what they think,
12 so I'm not letting everybody off the hook by not having a
13 formal vote. So we want to hear from everybody.

14 PANEL MEMBER KAVANAUGH-LYNCH: I think we've
15 talked before that this is a particularly relevant issue
16 to California, not that it's irrelevant in other parts of
17 the country, but I suspect if you had data that you would
18 see that the per capita use of sunscreen in California is
19 quite high in comparison to other states, and therefore
20 makes it -- fits one of our -- the criteria we've chosen.

21 MS. HOOVER: And I'm going to put you on the spot
22 now. What do you think about these 2? Are you interested
23 in these 2 classes, other classes, what is your opinion?

24 PANEL MEMBER KAVANAUGH-LYNCH: Well, I have to
25 say from the presentation, the one class is more

1 convincing than the other class, that it's important to
2 look at.

3 MS. HOOVER: And which one?

4 PANEL MEMBER KAVANAUGH-LYNCH: The benzophenones
5 are more convincing.

6 MS. HOOVER: For you?

7 PANEL MEMBER KAVANAUGH-LYNCH: Yeah.

8 MS. HOOVER: Okay.

9 Dr. Fiehn.

10 PANEL MEMBER FIEHN: Yeah, it's very hard to
11 recommend any not to investigate, right?

12 (Laughter.)

13 PANEL MEMBER FIEHN: So why would we -- why would
14 we possibly do that?

15 (Laughter.)

16 MS. HOOVER: Resources, I guess I would say.

17 PANEL MEMBER FIEHN: I know. I guess, so the
18 question really is do I have a better idea, for a better
19 class?

20 (Laughter.)

21 PANEL MEMBER FIEHN: And I do not have any better
22 idea how to use your valuable time.

23 I do wish, however, if there are already
24 investigations in the chlorinated benzophenones, I'd like
25 to know whether or not these have similarities or not.

1 Similarities in use, or, you know, so -- because obviously
2 you have already spent some time on those, so I'd like to
3 know more about derivatives also of those classes, I
4 guess.

5 MS. HOOVER: I guess in my mind by naming
6 benzophenones, we weren't -- we actually were being that
7 broad. But I think it's an important question for us to
8 actually look at the derivatives and see if they're a
9 completely different set of compounds or not. And we just
10 didn't have success yet. We did look at it a bit, but
11 we'll look -- we'll go back to that.

12 CHAIRPERSON BRADMAN: I think other people have
13 already spoken for me, but I'll just confirm again that I
14 think it's worth spending time on these 2 classes as
15 potential designated chemicals. And I like what's been
16 said here about looking at the other classes.

17 Some of the most compelling information for me
18 for both of these classes, particularly for the second
19 category is the, you know, presence of these chemicals in
20 breast milk, which means that pregnant women are being
21 exposed and neonates are being exposed, the high detection
22 frequencies for at least one of the compounds, and also
23 just the -- you know, log Kow and the bioconcentration
24 factors are very high for these.

25 So given that they're fairly common in consumer

1 products, I think there's a real potential for exposure
2 there, and understanding that would be helpful.

3 And also just given what we've already seen with
4 BP-3 and the HERMOSA study intervention, it just
5 underscores that that group is potentially important. And
6 particularly, when we get to the -- you know, the final
7 recommendation -- review documents, you know, it may be
8 that the laboratory components may not be that
9 challenging, because they're within the same class.

10 DR. PLUMMER: And I think the master method that
11 Jianwen showed earlier did include, you know, several of
12 the benzophenones in there. So it seems like that is a
13 promising addition -- or potentially promising addition.

14 MS. HOOVER: Okay. Well, thank you, Panel. I
15 just wanted to say, is there any more public input about
16 these classes before we move on.

17 Sorry, go ahead.

18 PANEL MEMBER QUINTANA: I just wanted to say, I
19 didn't vote yet --

20 MS. HOOVER: Oh, I'm sorry.

21 PANEL MEMBER QUINTANA: -- but I vote for putting
22 2 -- both classes of --

23 MS. HOOVER: No vote. No vote.

24 PANEL MEMBER QUINTANA: Yeah -- both classes
25 forward, especially from the persistence, bioaccumulative

1 and potential, like you said, and lipid soluble and -- in
2 breast milk.

3 DR. PLUMMER: Thank you.

4 MS. HOOVER: Okay. So thank you very much,
5 Jenny.

6 And any public comment about these 2 categories?
7 Any?

8 Okay, that's it then.

9 Thank you. So we'll be bringing both classes
10 back and follow up on the other questions that were asked.

11 CHAIRPERSON BRADMAN: So our next agenda item is
12 going to be a presentation on potential -- our agenda for
13 2017 for the Scientific Guidance Panel.

14 And with that, I'd like to introduce Sara Hoover,
15 Chief of the Safer Alternatives Assessment and
16 Biomonitoring Section of OEHHA, who is a real champion of
17 this Program.

18 So thank you.

19 (Thereupon an overhead presentation was
20 Presented as follows.)

21 MS. HOOVER: Okay. I'm just getting my
22 instructions here. Okay. How's that?

23 Is that loud enough?

24 Okay. Great.

25 Advance.

1 --o0o--

2 MS. HOOVER: All right. Everything is working.

3 Okay. So basically, this is -- we always have an
4 item like this as our last meeting -- at our last meeting
5 of the year, because we like -- again, we like to get
6 buy-in from the Panel and the public on what topics we're
7 talking about covering in the coming year.

8 Some of them will be very obvious to you. We've
9 already foreshadowed that. Our Environmental Justice
10 projects will be a big theme in the coming year, the work
11 that Nerissa described, also the FREES and multi-regional
12 study. So basically, this slide is kind of a summary of
13 what Nerissa has been talking about. And those are topics
14 that we'll be likely to go into more depth.

15 --o0o--

16 PANEL MEMBER SCHWARZMAN: There -- this
17 presentation isn't posted.

18 MS. HOOVER: That's true.

19 PANEL MEMBER SCHWARZMAN: Is it in here?

20 MS. HOOVER: No, it's not.

21 So the -- it was a presentation in flux, because
22 of the nature of what we're covering, and there was some
23 real-time editing going on here. Yeah. So, it's a very
24 brief presentation. It's about 3 slides.

25 --o0o--

1 MS. HOOVER: Chemical selection items. We just
2 heard that we're -- you know, from the previous meeting,
3 we're going to follow up on organophosphorus pesticides
4 first, followed by neonicotinoids and, now we're going to
5 be looking at chemicals used in UV applications,
6 specifically the benzophenones and phenolic benzotriazoles
7 to start with, and then doing the tracking as we just
8 discussed.

9 --o0o--

10 MS. HOOVER: The other thing, I want to talk a
11 little bit more about it, not all of you may know, but we
12 just passed the 10-year anniversary of the signing of the
13 law that established Biomonitoring California, September
14 2016. So we've been talking internally as a Program about
15 a way to celebrate and mark that 10-year anniversary.

16 And we flagged the March SGP meeting in
17 Sacramento to start doing some of that, and take a moment
18 to look at our significant achievements so far, and also
19 look forward for the Program and think about priorities in
20 the next 10 years.

21 And as part of that, we're thinking of different
22 ideas, and we're very interested in your ideas and the
23 public's ideas about what would be interesting for that.
24 We wanted to make it a different format, a little bit more
25 interactive, so having kind of panel discussions with key

1 staff and stakeholders who were involved in the Program
2 development.

3 We're hoping we might be able to actually have a
4 biomonitoring project participant. We'll have to figure
5 out if that's doable for various reasons.

6 We have some video footage. We have a
7 recruitment video that's been developed. We have other
8 video footage of interviews. So we'd probably do some
9 video element. There's also some very interesting website
10 features under development that -- one of which Nerissa
11 referred to, which is the map feature where we link our --
12 what we've done so far to different regions of the State,
13 and then, of course, any new biomonitoring results that
14 we'd be ready to talk about at that meeting.

15 --o0o--

16 MS. HOOVER: Other special topics. We stay in
17 touch regularly, at least on a quarterly basis, with the
18 Safer Consumer Products Program in DTSC, and we're always
19 interested in keeping in mind collaborative work with that
20 program.

21 We also are -- as many of you know, OEHHA is
22 embarking on this synthetic turf exposure project, a
23 subcomponent of which will be biomonitoring. And we may
24 have the opportunity to bring to the Panel, and let the
25 SGP comment on, some of the protocols being developed.

1 A new effort that we're trying to launch, and you
2 know we've always been looking at these things over time,
3 but we want to think about directly applying biomonitoring
4 data, and what we're learning, and what we'll continue to
5 learn about helping evaluate regulatory effectiveness,
6 which is one of the primary goals of the Program. And
7 then I added just this special session on ethics that Dr.
8 Fiehn just proposed.

9 --o0o--

10 MS. HOOVER: So that is all the topic areas. You
11 can think about that for a moment, but I did want to
12 surprise Laurel with a little extra thank you, which
13 actually, Shoba developed this slide for me.

14 And, you know, we all know that she has made
15 herself so essential to the running of the SGP, to the
16 production of the chemical selection documents as you just
17 saw, to the development of improvements of the
18 biomonitoring website. So we're just -- we're trying to
19 stay cheerful.

20 (Laughter.)

21 MS. HOOVER: And she's just been a great pleasure
22 to work with. So I did say that she's going to stay in
23 OEHHA. And we're really hoping to, through Laurel, build
24 strong ties with the new program on climate change that
25 she's going to be working on, as well as CalEnviroScreen.

1 And this is just some screen shots of some of the many
2 documents and work that Laurel has contributed to.

3 So we really want to wish you very well, Laurel,
4 and then we wanted to give a little shout out to Keena --
5 (Laughter.)

6 MS. HOOVER: -- who has provided many cheerful
7 contributions to our teleconference calls over the years.
8 (Laughter.)

9 MS. HOOVER: So thanks again, and all the best.
10 (Applause.)

11 MS. HOOVER: Then I have a little -- let's see
12 where did I leave it. It's still over there. I have a
13 little present for you. So I'm going to give you that and
14 then we'll go on. Okay. Here you go. Five roses for
15 your 5 years, from my garden.

16 DR. PLUMMER: Thank you.
17 (Applause.)

18 MS. HOOVER: Okay. With that, back to business.

19 CHAIRPERSON BRADMAN: So we now have some time
20 budgeted for discussion related to the possible agenda
21 items. We also have time for public comment on that. So
22 is there -- Dr. Quintana.

23 PANEL MEMBER QUINTANA: So I was just thinking
24 more about this topic of environmental justice, because it
25 seemed to me that the California Biomonitoring Program had

1 different themes. One theme is exposures that we -- it
2 might be significantly -- we don't know about, say in
3 consumer products, like you just -- merchandise,
4 sunscreens. And those aren't particularly environmental
5 justice, except maybe towards people that can afford to
6 buy sunscreen maybe, but they're not that differentially
7 exposed between populations.

8 Another -- but environmental justice really
9 refers to vulnerable populations, but really differential
10 exposures, and diesel would be one example of that. And
11 so I was just wondering if we should have any more
12 explicit discussion of how resources are split among
13 different issues or -- you know, because should we more
14 explicitly look for differential exposures as a focus?
15 And our role might be to document them, and to document
16 interventions like you were saying that would work, you
17 know, in populations.

18 And I just wasn't sure if we had this discussion
19 of different themes in the work. And another theme is
20 consumer products versus classical environmental exposures
21 like, you know, trucks or smoke stacks, you know, spewing
22 out stuff, or something that's more -- less under personal
23 control, you know.

24 MS. HOOVER: Right, right.

25 PANEL MEMBER QUINTANA: So that would be like a

1 third area of exposures, say pesticides maybe or something
2 like that.

3 MS. HOOVER: Well, I think that's a really great
4 proposal. And that fits very well into the March -- you
5 know, some of the March discussions about looking at where
6 we are and where we're going. I think that would be very
7 fitting for that particular discussion.

8 PANEL MEMBER FIEHN: I would like to see that we,
9 at some point, discuss costs of analytical services. It
10 is important that we not -- that we are able to have
11 limited budgets and do as much as we can for that. And so
12 that might be a -- we have heard today about combining
13 assays, multi-target assays, but there might be more. And
14 I do understand that there was a larger call on exposome
15 studies by the NIH.

16 And one of the problems was that the State-funded
17 labs, not only California but others as well, were so
18 expensive that they were not chosen for being labs that
19 were conducting such studies. So I'd like to -- at some
20 point, we need to talk about costs and how to look at
21 costs.

22 MS. HOOVER: Yeah, good proposal.

23 CHAIRPERSON BRADMAN: You're talking about the
24 CHEAR?

25 PANEL MEMBER FIEHN: Yes.

1 CHAIRPERSON BRADMAN: I'm sorry. I just wanted
2 to clarify, that was about the --

3 PANEL MEMBER FIEHN: Yes.

4 CHAIRPERSON BRADMAN: -- CHEAR --

5 PANEL MEMBER FIEHN: Yes.

6 CHAIRPERSON BRADMAN: -- program through the NIH?

7 PANEL MEMBER QUINTANA: Being from Southern
8 California, all the talk there is about potentially we're
9 going to start drinking a lot more reclaimed water. And
10 so there has been some discussion of what could be a
11 biomarker of drinking that water. There's some that had
12 been proposed of some of the chemicals that are in
13 reclaimed water or reused water, basically. But I just
14 wonder if that has ever been formally looked at in this
15 program?

16 MS. HOOVER: You know, I think we have talked
17 about that in the past. I feel like that topic has come
18 up peripherally, and certainly interest in drinking water,
19 so -- or maybe I'm -- you know, I know I've heard about
20 that topic, and it's been of interest, so it's a great
21 idea, you know, to have a -- consider that, and
22 particularly the Southern California focus on issues
23 focused in Southern California. I think it's important.
24 I don't know if -- let's see who else is still here.

25 And I would like to hear also in terms of -- in

1 addition to your additional ideas, just any thoughts on
2 what is proposed so far, if -- you know, go ahead.

3 CHAIRPERSON BRADMAN: Put the slide back up.

4 MS. HOOVER: Yeah.

5 PANEL MEMBER QUINTANA: I think I saw -- I'm not
6 sure. Just to make sure I saw the results return. I
7 think that's one of the most successful and innovative
8 pieces of this Program is that results return. It might
9 be nice to feature that. Maybe not just -- maybe you're
10 doing it through the participant, but just to maybe
11 feature --

12 MS. HOOVER: You mean the 10th anniversary?

13 PANEL MEMBER QUINTANA: In the 10th anniversary.

14 MS. HOOVER: That's a great idea.

15 PANEL MEMBER QUINTANA: Just because it's such a
16 very striking success, people thought, oh, no one can deal
17 with uncertain information, but yeah they can. And it's
18 an important --

19 MS. HOOVER: Yeah, they can. We did it.

20 PANEL MEMBER QUINTANA: It's an important point.

21 MS. HOOVER: So that's a great point and I should
22 say, which I didn't say as part of the slides, the
23 significant achievements so far, one, we've -- we're
24 starting to get an internal committee to work on this.
25 One of the things that Lauren Zeise really wanted was to

1 have a little report, not a technical report, but sort of
2 a more public, attractive, you know, interesting report.

3 And we were thinking about trying to identify
4 like our 10 top achievements of the Biomonitoring
5 California, which is something that actually George
6 Alexeeff had us do within OEHHA. So results return was on
7 my list for sure. So that would be featured in a report
8 like that.

9 PANEL MEMBER MCKONE: This is a thought about the
10 10th anniversary. I don't know how much we planned,
11 but --

12 MS. HOOVER: We are just starting next week
13 planning, so all ideas welcome.

14 PANEL MEMBER MCKONE: You know, rather than -- so
15 we'll have a regular meeting, but I don't know how
16 possible it is to have a half day after or before.

17 MS. HOOVER: Yeah. It's not going to be a
18 regular meeting. It's going to be a shorter meeting.

19 PANEL MEMBER MCKONE: So I mean -- but it will be
20 tied to our regular meeting?

21 MS. HOOVER: Sorry?

22 PANEL MEMBER MCKONE: No, but I was saying if
23 it's with our regular meeting --

24 MS. HOOVER: Yes.

25 PANEL MEMBER MCKONE: -- it would be one day

1 before or after, so people could stay over. And you're
2 going to invite in -- I mean, it's going to be separate
3 from the Guidance Panel meeting.

4 MS. HOOVER: No, we were thinking of a
5 coordinated -- just a different animal of an SGP meeting,
6 but still --

7 PANEL MEMBER MCKONE: Oh, oh. So it wouldn't be
8 -- we won't have to do our regular work then?

9 (Laughter.)

10 MS. HOOVER: I'm not going to agree with that
11 statement --

12 (Laughter.)

13 MS. HOOVER: -- because there's going to be
14 plenty of input from the Panel --

15 PANEL MEMBER MCKONE: Right, right. Well, the
16 question is --

17 MS. HOOVER: -- like on some of the issues that
18 Jenny just highlighted.

19 PANEL MEMBER MCKONE: You know, so my point is we
20 may feel really rushed or we may give short change to this
21 and that, if we try to have a regular meeting and a
22 celebration, so long as we're going to be --

23 MS. HOOVER: No, it's going to be planned to not
24 give short shrift.

25 PANEL MEMBER MCKONE: Okay.

1 MS. HOOVER: And any Panel input item would be,
2 you know, enough time allotted for the Panel input. But
3 the idea is to have a different kind of a meeting, and
4 take a moment to mark this event.

5 PANEL MEMBER MCKONE: Are you going to bring in
6 like a brief keynote speaker or something? Maybe for
7 lunch, instead of going out to eat, we could --

8 MS. HOOVER: All ideas welcome.

9 PANEL MEMBER MCKONE: That's great. I think it
10 would be really useful --

11 MS. HOOVER: Nothing -- you know, I haven't even
12 written the agenda, you know, on the paper yet. So it's
13 all wide open.

14 PANEL MEMBER MCKONE: Get some big name to get an
15 inspirational speech.

16 MS. HOOVER: Well, I mean, I think that the idea
17 we had around that is inviting, you know, key people who
18 have been involved in the legislation, like historical
19 figures coming back, and not necessarily a lot of talks
20 and presentations, but a little bit more interactive and
21 multi-media, and that kind of thing. So that's the idea,
22 but if you have any keynote speaker in mind, shoot me your
23 ideas by email.

24 PANEL MEMBER QUINTANA: I just -- my
25 understanding was this whole Program came about largely

1 because of activism by the breast cancer community, is
2 that correct? And if so, it would be nice to bring it
3 back to feature some of the breast cancer work.

4 MS. HOOVER: Well, yeah, that's why we're saying
5 like some of the key staff and stakeholders who were --
6 and actually, another, you know, key person who got us
7 across the finish line was Joan Denton, former director of
8 OEHHA. She played a huge role in moving the Program
9 forward. So definitely -- you know, we actually had a
10 little tiny internal celebration at one of our program
11 meetings.

12 And we were looking at old documents, you know,
13 and like all the work that went in long -- before the bill
14 was signed as well. So, yeah, we're trying to take a
15 moment and just look at how that was pulled off and where
16 we are.

17 CHAIRPERSON BRADMAN: Can you put the slide up on
18 the agenda item.

19 MS. HOOVER: These are all potential agenda
20 items.

21 CHAIRPERSON BRADMAN: Right, no, but there was --

22 MS. HOOVER: Which one?

23 Asa, microphone.

24 CHAIRPERSON BRADMAN: I'm sorry. I think it was
25 the one just before this.

1 MS. HOOVER: The one just before that is the
2 cover slide.

3 CHAIRPERSON BRADMAN: Okay. So I think it was
4 this one.

5 MS. HOOVER: Yeah, this is just -- you know, I
6 mean, we typically do where we pick and feature a
7 particular project and go into depth. We have a lot to
8 choose from now. So actually it would be helpful to hear
9 if there's a particular study you'd want a longer
10 discussion of. Some of that environmental justice will
11 still be in the development stages.

12 CHAIRPERSON BRADMAN: Right. I think that's an
13 area where I'd like to see some more discussion.

14 MS. HOOVER: Yeah.

15 CHAIRPERSON BRADMAN: So there's not much more to
16 say than that, but we've touched on it at the last meeting
17 and earlier today.

18 MS. HOOVER: Yeah.

19 CHAIRPERSON BRADMAN: And I think that's
20 something where we can have more outreach. And again, if
21 we could perhaps diversify the geographic distribution of
22 groups and people that are providing input to the Program.

23 MS. HOOVER: Yeah.

24 CHAIRPERSON BRADMAN: I know one time we talked
25 about possibly a meeting in Southern California, which

1 would be expensive, and difficult for most of us. I know,
2 some of us already come up from Southern California.

3 (Laughter.)

4 CHAIRPERSON BRADMAN: And, in fact, I've noticed
5 that people missing today are from Southern California,
6 but --

7 MS. HOOVER: I don't think that's because of
8 Southern California. It was various reasons why they
9 couldn't make it.

10 CHAIRPERSON BRADMAN: Okay.

11 MS. HOOVER: Yeah.

12 CHAIRPERSON BRADMAN: But, you know, if -- we
13 could kind of extend -- again, extend that kind of
14 geographic outreach. That's something to consider.

15 PANEL MEMBER QUINTANA: Yeah. I think especially
16 the Central Valley feels overlooked, Imperial Valley and
17 Central Valley. So not just San Diego, L.A., San
18 Francisco, but --

19 CHAIRPERSON BRADMAN: Right.

20 MS. HOOVER: Overlooked in terms of people
21 visiting --

22 PANEL MEMBER QUINTANA: Some of the -- to real --
23 overlooked in terms of, you know, being -- feeling part of
24 these projects that are going on, and people come there
25 and present their work. And, you know, I just think it's

1 important to --

2 MS. HOOVER: You mean, so geographically going to
3 the region.

4 PANEL MEMBER QUINTANA: Geographically going to
5 that region --

6 MS. HOOVER: Yeah, yeah.

7 PANEL MEMBER QUINTANA: -- with information,
8 making it easy for locals to come, you know, and have
9 their say.

10 MS. HOOVER: Yeah. And, you know, I mean, I know
11 we don't want to talk about resources, but the reality is,
12 you know, we just don't have the travel budget to do that.
13 We don't really have a travel budget for this Program
14 within OEHHA. We just, you know, have a small piece of,
15 you know, that we use. And so we've been really
16 efficient.

17 And we also did try, at one point, having a --
18 you know, the conference call where we made Panel members
19 available in Southern California and elsewhere. And that
20 was logistically nightmare-ish, and didn't improve -- it
21 didn't improve turn-out.

22 But I do think -- I mean, I think that what
23 you're saying, and what I hear you saying, and I think
24 we're embarking on, is a different sort of a meeting. You
25 know, not an SGP meeting, but community meetings. And

1 like Nerissa said, that is part of the outreach. It's
2 actually going to these places. And we've been making
3 contact with these organizations. And like when we talked
4 to LA PSR, they offered to like host a community session.
5 So that's definitely the thinking going forward.

6 PANEL MEMBER QUINTANA: Can I say something else?

7 PANEL MEMBER KAVANAUGH-LYNCH: I'm having some
8 thoughts that I'm hesitating about bringing up, but
9 clearly I've changed my mind about that.

10 So in terms of a 10-year celebration, I fully
11 understand the looking back and recognizing the people who
12 were instrumental in getting us here today, but I would
13 maybe suggest a looking forward to what's the potential
14 for the Program, what can we do as more of an emphasis?

15 MS. HOOVER: Definitely. And that's -- yeah,
16 that's paired. Yeah, so there's a little bit of a
17 marking, but a big part is looking forward, yeah.

18 PANEL MEMBER KAVANAUGH-LYNCH: Yeah. And I think
19 we've talked before, and I am politically unsavvy at best.
20 But thinking about ways to get noticed. I believe we've
21 talked in the past about getting some of our political
22 leadership involved, and possibly even biomonitored, and,
23 you know, getting legislators from around these key places
24 in the State that we can't go visit, but we know where
25 they all are, and getting them biomonitored and returning

1 the results to them in a public meeting, I think, would
2 get a whole lot more recognition than a different flavor
3 of SGP meeting.

4 MS. HOOVER: Yeah. You know, we had a project
5 planned. We had it all set up. We had it scheduled. We
6 had the phlebotomists, and so that was -- that was a plan,
7 and it was not -- we didn't get it approved.

8 So I don't -- not within OEHHA. OEHHA was fully
9 on board. I'm going to have to speak up for OEHHA, and
10 otherwise I am not going to say how it was shot down.
11 However, you know, leadership has changed, and attitudes
12 have changed, and so I think, you know, we could see again
13 if that might be an option.

14 PANEL MEMBER FIEHN: Including the illicit drugs.
15 (Laughter.)

16 MS. HOOVER: Okay.
17 (Laughter.)

18 CHAIRPERSON BRADMAN: Yeah, that's fine, and then
19 we have public comment that we'll get to.

20 Go ahead.

21 PANEL MEMBER QUINTANA: I just -- in terms of the
22 agenda items for next year, I just remembered about
23 something I'd asked about a go or two, and I was just
24 going to ask for an update. One, is that there was a
25 paper that came out in EHP on new exposure of biomarkers

1 as tools for breast cancer epidemiology, biomonitoring
2 prevention, a systematic approach based on animal
3 evidence.

4 And I think I had asked back then how many of
5 those proposed chemicals of concern, through the animal
6 literature had -- were in our Program or --

7 MS. HOOVER: Yeah. I mean, I -- I'm very
8 familiar with that paper. I've looked at it, and I think
9 I -- I think we should set up a conversation off-line, and
10 I can just give you the feedback directly, and then we'll
11 see -- we can maybe form a topic that we'd bring to the
12 Panel, but let me talk to you about it off-line.

13 CHAIRPERSON BRADMAN: So we have one public
14 comment to wrap-up. I don't -- again, I don't -- any
15 comments through email or --

16 MS. DUNN: No.

17 CHAIRPERSON BRADMAN: No. Okay. So --

18 DR. SINGLA: Hello. Veena Singla with Natural
19 Resources Defense Council. And I think it's great that
20 the Program has been coordinating with the Safer Consumer
21 Products Program, and supporting each other's work. And I
22 would echo one of Dr. Bradman's suggestions from the
23 beginning of the meeting, in terms of trying to coordinate
24 the work with other priorities, going on in within CalEPA
25 and DPH as well, in terms of thinking about some of the

1 environmental justice work, because I think that's -- that
2 would be a great way to kind of leverage and -- to
3 leverage limited resources and have the results also have
4 the most impact as well.

5 And in regards to the 10-year anniversary
6 celebration, I think kind of in terms of kind of getting
7 some of the attention that was under discussion, it would
8 be helpful if the report to the legislature was prepared
9 in time for the -- this meeting. I think that would be a
10 great way to update the legislature as to what the recent
11 Program accomplishments have been.

12 MS. HOOVER: I will comment on the first part of
13 that, and I'll see if anyone wants to give an update on --
14 the leg report is still -- still in review, as you
15 probably know.

16 I will say there's a lot of activities that have
17 been going on. We've been really, really busy. And I'll
18 just mention another really interesting environmental
19 justice thing we've been doing, which is we've been in
20 touch with Ana Mascareñas and we've been -- we had -- I
21 had a meeting with her. Nerissa and I are going to meet
22 with her. So that's another kind of coordination we're
23 going to try to do going forward.

24 And then I'll say another pieces, which is Gail
25 Krowech, who's retired, and hopefully soon to be a retired

1 annuitant. We're going to have her revisit the work that
2 she did many years ago at the beginning of the Program,
3 where she went and reached out to different
4 organizations -- or agencies -- government agencies to
5 survey them about issues of concern, emerging issues. So
6 we're going to revisit that work with her leading the way.

7 DR. WU: I am sorry that I don't have an update
8 on the 2016 legislative report the Program put together
9 and submitted at the beginning of the year. We have
10 gotten some comments back internally, which means that at
11 least it's moving. And hopefully it will be out by March,
12 but there's no way for us to predict when that will be.
13 Even by the time it comes out, that will be out of date,
14 unfortunately.

15 I think we have plans for a number of different
16 communication methods that we can use, in lieu of an
17 updated legislative report that won't go through the same
18 level of scrutiny and delay. And so hopefully, we'll be
19 able to highlight some of the updated status of our
20 project through these -- the different media, the
21 newsletter, the report that Lauren Zeise has talked about,
22 and other means.

23 CHAIRPERSON BRADMAN: I just want to also
24 highlight one topic that we haven't really talked about
25 too much today, but is, in general, on our agenda around

1 pesticide biomonitoring. Actually, just last week, a week
2 ago yesterday, we had a meeting at CHAMACOS with the Ag
3 Commissioners from Santa Cruz and Monterey County, and
4 also Brian Leahy, and staff from DPR.

5 And there's just a lot of issues going around in
6 the State right now around pesticide use in their schools
7 near homes. And there was definitely, you know, interest
8 in more biomonitoring around pesticide exposures, so that
9 should -- it's on our agenda, but we should keep thinking
10 about it.

11 MS. HOOVER: Yeah, and I'll just add that the
12 only thing I showed up here was organophosphorus
13 pesticides, but we're planning to again have like a
14 pesticide theme when we cover. So that we would invite,
15 you know, some external guest speakers. And I'll
16 definitely be talking with you about that.

17 Okay. Well, that's great input. And again,
18 everyone in the public, and if -- you can feel free to
19 email us any other ideas or issues of concern.

20 And back to you, Asa.

21 CHAIRPERSON BRADMAN: So I think that, at this
22 point, we're ready to close the meeting.

23 We do have a period of open public comment on any
24 topic related today. I think we've probably covered that
25 in the last comment.

1 But if there's anyone who has a last-minute
2 comment, let us know?

3 Otherwise, we're going to proceed with our
4 wrap-up and adjournment for today. A transcript of this
5 meeting will be posted on the Biomonitoring California
6 website with -- when it's available.

7 Our next Scientific Guidance Panel meeting is
8 going to be on March 8th, 2017, in Sacramento.

9 And Leah Bumalay -- I hope I'm pronouncing that
10 correctly -- of OEHHA will be in touch soon to pull dates
11 for other 2017 meetings in July and November. If you're
12 already aware of constraints on your schedule -- this is
13 for Panel members and others as well -- for those months,
14 please let Sara Hoover know.

15 And then I just want to thank the Panel today for
16 a great discussion and the audience for the discussions
17 today. And we can now formally adjourn the meeting.

18 Thank you.

19 (Thereupon the California Environmental
20 Contaminant Biomonitoring Program, Scientific
21 Guidance Panel meeting adjourned at 4:14 p.m.)

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1 C E R T I F I C A T E O F R E P O R T E R

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

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

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

14 IN WITNESS WHEREOF, I have hereunto set my hand
15 this 17th day of November, 2016.

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