MEETING

STATE OF CALIFORNIA

ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

ENVIRONMENTAL CONTAMINANT BIOMONITORING PROGRAM

SCIENTIFIC GUIDANCE PANEL

THE CALIFORNIA ENDOWMENT

OAKLAND CONFERENCE CENTER

7TH FLOOR

1111 BROADWAY

OAKLAND, CALIFORNIA

THURSDAY, JULY 10, 2014

10:01 A.M.

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

PANEL MEMBERS:

Ulrike Luderer, Chairperson, M.D., Ph.D.

Asa Bradman, M.S., Ph.D.

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

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

Thomas McKone, Ph.D.

Julia Quint, Ph.D.

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

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY:

Dr. Gina Solomon, Deputy Secretary, Science and Health

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT:

Dr. George Alexeeff, Director

Mr. Alan Hirsch, Chief Deputy Director

Dr. Lauren Zeise, Deputy Director, Scientific Affairs

Ms. Amy Dunn, Research Scientist III, Safer Alternatives Assessment and Biomonitoring Section

Ms. Sara Hoover, Chief, Safer Alternatives Assessment and Biomonitoring Section

Ms. Fran Kammerer, Staff Counsel

Dr. Laurel Plummer, Associate Toxicologist, Safer Alternatives Assessment and Biomonitoring Section

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

DEPARTMENT OF PUBLIC HEALTH:

Dr. Michael J. DiBartolomeis, Chief, Exposure Assessment Section, Environmental Health Investigations Branch, Lead of Biomonitoring California

Dr. Laura Fenster, Research Scientist

Ms. Duyen Kauffman, Results Return Coordinator

Dr. Jianwen She, Chief, Biochemistry Section, Environmental Health Laboratory

Dr. Nerissa Wu, Chief, Chemical Exposure Investigations Unit

DEPARTMENT OF TOXIC SUBSTANCES CONTROL:

Dr. Myrto Petreas, Chief, Environmental Chemistry Branch

GUEST SPEAKERS:

Ms. Claudia Polsky, Deputy Attorney General, California Department of Justice

Dr. Thu Quach, Cancer Prevention Institute of California

Dr. Meredith Williams, Deputy Director, Safer Products and Workplaces Program, California Department of Toxic Substances Control

ALSO PRESENT:

Ms. Nancy Buermeyer, Breast Cancer Fund

Mr. Dave Edwards, California Air Resources Board

Mr. Brian Endlich, California Department of Toxic Substances Control

Ms. Trudy Fisher

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

ALSO PRESENT:

Mr. Ernest Pacheco, CWA

Dr. Veena Singla, Natural Resources Defense Council

I N D E X

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

P R O C E E D I N G S

DIRECTOR ALEXEEFF: Good morning, everyone. Is that working? All right. I was told it will -- all right. I'll follow the audience direction here.

Good morning, everyone. Ah, I can hear it now.

All right. Hi. I'm George Alexeeff, Director of the Office of Environmental Health Hazard Assessment. I want to welcome the Panel, as well as the audience both here and on our webcast to the Scientific Guidance Panel for California Environmental Contaminant Biomonitoring Program, also known as Biomonitoring California.

So I want to thank the Panel for taking time out of their busy schedules to be here to help us discuss these issues regarding the Biomonitoring California Program. And I also want to thank the public for their participation in this important meeting.

So I want to remind everyone that this meeting is being transcribed, and it's also being broadcast via webinar. So please remember to speak clearly into the microphones.

So I would like to provide a brief overview of the last Scientific Guidance Panel meeting. Our last meeting was held in Oakland on March 27th. At that meeting, the Panel heard Program and Laboratory updates. They unanimously voted to recommend adding chromium to the

list of designated chemicals for Biomonitoring California. They unanimously voted to recommend adding antimony, beryllium, cobalt, manganese, molybdenum, thallium, tungsten, and uranium to the list of priority chemicals for Biomonitoring California.

The Panel further recommended that the Program develop methods to measure antimony and beryllium. Two public comments on the priority metals agenda item that were submitted after the March meeting have been posted on the biomonitoring website.

The Panel discussed with Dr. Jon Sobus of U.S. EPA his research on best practices for biomarker collection, analysis, and interpretation. And for more information on the March meeting, please visit our biomonitoring website.

So as a few logistic announcements, emergency exits and restrooms are to my right and back.

And now, I'd like to turn the meeting over to the Panel Chair, Dr. Ulrike Luderer.

CHAIRPERSON LUDERER: Thank you very much, George. I'd also like to welcome everybody, all the Panel members and the members of the public who are participating either here in person or by webcast, as well as the Program staff. I'd like to just briefly review the Panel goals for the meeting. So the Panel today will

receive Program and Laboratory updates and provide input on those. And we're also going to participate in a special afternoon session about exposure to chemicals in consumer products. We'll hear from three distinguished speakers. And the Panel and the speakers will discuss how the Biomonitoring California Program can work together with other unique California programs, such as the Safer Consumer Products Program, and the Safe Cosmetics Program to achieve common goals. And we'll hear more about those programs this afternoon.

I wanted to remind everyone that for each agenda topic, time is provided for Panel questions, for public comment, and then also for Panel discussion. Regarding the public comment, if any member of the public would like to make a comment, he or she should please fill out a comment card, which can be obtained from the table near the door. And you can turn those in to Amy Dunn. Amy is there in the back holding up the comment cards. And members of the public who are not at the meeting, but who are participating by webcast, are invited to provide comments via email to biomonitoring@oehha.ca.gov. And the comments will be read out loud during the appropriate agenda items to which they refer.

To make sure that the meeting proceeds on schedule, we'll -- and that everyone has the opportunity

to speak, we're going to have to subject the public comments to time limits. And we'll just simply divide the time allotted for public comments equally among all those who wish to speak.

I also wanted to remind everyone, please try to -- please keep your comments focused on the agenda item that's being discussed. And there is time at the very end of the meeting for an open public comment period as the last item of the day.

I also wanted to remind everyone again to speak into the microphone and please introduce yourself for the benefit of the transcriber as well as for those people who are participating via webcast.

The materials for the meeting were provided to the Scientific Guidance Panel members and are also posted on the Biomonitoring California website prior to the meeting today. There are a small number of copies of the presentations and documents, and one sample Scientific Guidance Panel folder for viewing at the table at the back of the room.

We will take two breaks today, one around noon for lunch, and one around 2:15 in the afternoon.

And now, I'd like to actually -- to start the meeting by introducing Dr. Michael DiBartolomeis, who is Chief of the Exposure Assessment Section, California

Department of Public Health and the lead of Biomonitoring California. And Dr. DiBartolomeis will provide an update on Biomonitoring California activities.

Michael.

(Thereupon an overhead presentation was presented as follows.)

DR. DiBARTOLOMEIS: Thank you, Dr. Luderer.

Good morning, Panel. Good morning, George. Good morning, audience, and those of you who are on the phone, and good morning, court reporter.

(Laughter.)

DR. DiBARTOLOMEIS: You don't get any credit.

(Laughter.)

DR. DiBARTOLOMEIS: This morning, as we usually do, I'm going to cover very briefly some highlights of what's happened since our last meeting in terms of the general Program functioning and activities. And then, of course, I'll be followed up by two more detailed presentations by the two labs that will actually give you some data and other things to keep your interest.

So let me go to the first slide.

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DR. DiBARTOLOMEIS: Wrong arrow. There we go.

Start with a few Program announcements, including an update on our Program funding, which I think you'll

find informative. And then as usual, I will cover the highlights and progress of our four -- now four major full collaborative projects that we're doing in the Program. And I want to remind folks that we also do -- these are full projects where we are involved from the start to end with study design, specimen collection, of course the laboratory analyses, and then the data analyses and reporting and publications, et cetera.

We also do partial collaborations, for lack of any other way to describe them, which would include any part of a study, but at least the laboratory analyses. So these are just the four major collaborative work projects that we work on.

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DR. DiBARTOLOMEIS: With regard to Program announcements, as you know, or should know, we are required every two years to submit and post a legislative report. And I'm happy to say that the report has been finished by the Program. Unfortunately, it hasn't been released yet. Even though it was submitted for approval and release in January when it is due, we're still waiting for the actual release of the report. And I don't have a -- I don't have a date at this point. I don't know when it's going to be released.

We have -- since March, we have launched our new

interactive online database of biomonitoring results. And if you haven't had a chance to go in there to take a look at it, there's the link. So for those of you who are online, you can go check that out while you're listening to me. And it's incredible as usual. And I give a lot of credit to OEHHA, Amy Dunn and others, who -- and my staff over in EHIB that worked on this.

I'm going to now turn to the next slide, where I'm going to cover some updates or some -- wrong arrow again.

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DR. DiBARTOLOMEIS: -- on the Program evaluation. At the last meeting, I explained what the Program evaluation was for. It's actually required under -- with the CDC grant. We've expanded it somewhat to include the whole Program, not just the CDC deliverables. Although, there are five major CDC deliverables, which I'm not going to mention here, unless you really want to hear them. Two of them are specifically related to the labs, so there's a separate component to the evaluation that includes a laboratory evaluation, where we had a separate subcontractor to do this. So actually Christine Arneson, who many of you know and have spoken to, is the overall Program evaluator.

And the laboratory evaluation report has been

drafted. It's in its -- it's pretty much a final draft stage. The laboratory is reviewing it, and there will be some sort of minor revision kind of, but otherwise it's ready to go be and be incorporated into the general report.

Since the last meeting, when I announced that there would be some key informant interviews, those have been completed. There have been 25, which is actually substantial when you think about having to sit down and talk for a couple of hours with people. It's quite a bit of work. Fourteen current and previous staff were interviewed, three current and previous SGP members, and I assume you know who you are, five external collaborators and then three stakeholders were interviewed.

In addition to the interviews, we had an online survey that was sent out to a variety of people. And the questions for the interviews and the questions in the surveys had some consistency and overlap. And then there were also some specific questions that were not -- that were covered because of the different Program arms.

So we had 49 surveys go out and 40 were completed and returned. I was trying to get 100 percent, but we, I don't know, missed on that a little bit, but not bad.

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DR. DiBARTOLOMEIS: Turning to the next slide.

Where are we now?

Christine is currently analyzing the data. And it's substantial. I can only imagine. She has broken it into four thematic areas, which include Program Organization, which would include like the structure of the Program and how it functions, its management structure, communication, and decision making.

Another thematic area is Program Sustainability, which is predominantly focusing on funding and staffing and long-term projections for its continuation.

The third thematic area is Program Outcomes and Impacts. And this would include the goals of the design and results of studies, and how they impact policy and public health. And just to mention the policy implications, this afternoon's session, of course, as I plug it several times while I stand here, is one of those kind of areas where we're trying to bridge the science with the policy.

And then finally, Public Involvement, which includes the Scientific Guidance Panel. And that would be relationships with collaborators, participants, external advisors and stakeholders, and, as I mentioned, how we utilize the Scientific Guidance Panel.

So I'm really looking forward to that report actually. It should be ready -- well, it's definitely

going to be ready before the CDC grant ends at the end of August, but I'm hoping to have it sometime sooner. I don't know when our next SGP meeting will be, but my guess is that we'll be able to summarize some of those results at that next meeting.

It's going to be in November I've been told, which makes sense. It's usually around November.

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DR. DiBARTOLOMEIS: Okay. Turning to the next slide. When I make slides, I tend to follow the rule of not having gratuitous pictures on the slides, and so mine tend to be kind of black and white and kind of boring. However, I want you to note that this is not a gratuitous picture. This is a piggy bank, and later we will be passing the hat. We take any level of denomination.

So actually we -- the good news is that in the 2014-2015 budget, we -- the Program received $700,000 augmentation of State -- I'm sorry, special funded -- from special funds. It is a two-year limited term funding. And half the money went to the Department of Toxic Substances Control, and half of it went to CDPH.

We don't have any real specifics, other than in terms of how we're going to use that funding, at this point. Predominantly, it will be used for staffing. And it will allow us to hire in the Program for staff for two

years.

There isn't any reason why it couldn't be extended past two years, but there isn't anything yet informally that would allow that to happen. So that's the good news.

The other thing that happened was that the Department of Public Health submitted, through the Agency, a proposal to work with the Governor's Office or whatever, and the legislature, a proposal to fund public health in a reinvestment -- I guess a reinvestment proposal. And it was $55 million. And in that $55 million were $2 million for the Biomonitoring Program in the General Fund.

And we were really confident that we were going to receive this money. And, in fact, I think almost all the people who were -- all of the programs that were in that reinvestment proposal were feeling pretty good that the vote was going to go in their favor. And then we heard sort of on the 11th hour that only one of the programs in that public health reinvestment would be funded, and it was sort of pulled out. And biomonitoring did not receive those $2 million of general fund.

So I guess, in that regard, we're back to square one. And I'm assuming -- I haven't yet heard anything formal, but I'm assuming that we will again try for augmenting our stable State funding. So, at this time, we

have $700,000 coming in for the next two years for the Program, and then we have the CDC funding.

So back in March, we had said that we had received the funding opportunity announcement from CDC. Well, we did submit a proposal. Just to remind you that the proposal is -- and the award would be for up to $1 million per year for five years. That's what our proposal was for the full $1 million.

Because of the way the FOA was written, it is a very limited scope of work. In other words, they wanted us to be -- any Program -- any State biomonitoring program that would be applying to be concentrating on generating data, not on new methods, on results return that sort of thing. So that's the proposal we gave. It is represented -- it's basically focusing on representative population biomonitoring. So there would be no new methods development.

So given this budget and our discussion this afternoon and just in your general kind of consideration of the Program think about in the next five years we currently project to have a significantly less amount of funds available. And we can certainly talk more about that, if you want. It's your prerogative.

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DR. DiBARTOLOMEIS: Now, going -- turning to our

Program project updates. I'm actually going to start with the BEST project, which I should probably read the acronyms. Let me find my first page, because I never can get these right. The Biomonitoring Exposures Study. The Pilot BEST -- there's two parts of this as you recall. There's the Pilot part and then there's the Expanded study.

With regard to the Pilot BEST, the -- a huge significantly -- a huge accomplishment was returning the second set of results, which just happened at the end of June. And I actually saw the last day where they were preparing the packages. And I'm -- it's incredibly impressive.

First of all, there are a large number of participants in this study. There are also -- the amount of materials is incredible. I mean, I saw a team of about seven or eight people in a room, listening to the soccer game, putting this package together. And it was very impressive and it took all day. So this is not -- and plus all the work to get it up to that point. So this is a very huge -- it's only a little box on a table on a slide, but it represents a lot of work. So I just want to -- kudos to everybody who worked on that.

So we're also still undergoing some analyses of specimens. These include the polybrominated diphenyl

ethers, metals, and perchlorate. Summary statistics of other Pilot BEST panels will be posted on the Biomonitoring Program's website's searchable results database in the next several weeks. And I just mentioned the link for that. So you should be looking for that in the next couple of weeks. And other panels include the PFCs, perfluorinated compounds, organochlorine pesticides, pyrethroid pesticides, organophosphate pesticides, polychlorinated biphenyls, PCBs, PAHs, polycyclic aromatic hydrocarbons, phthalates, and phenols.

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DR. DiBARTOLOMEIS: So now turning to where we are with the Expanded BEST status. Since the last meeting, we have continued with analyzing both chemicals that would be considered in the first set, as well as chemicals that would be considered in the second set. So in other words, PFCs in metals in one lab, and then -- and also the urine metals have begun to be analyzed. So we expect that this will be rolling along and will continue past when the CDC grant ends in August 31st. Assuming we get the new funds in, this is also part of the scope of work in the new grants to continue with the Expanded BEST analyses.

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DR. DiBARTOLOMEIS: The other program -- the

other project that we spent a considerable amount of time on at the last meeting is the Genetic Diseases Screening Program collaboration, or GDSP. If you recall, Dr. Wu gave a synopsis of what that study design and the goals of the project would be.

And so our pilot -- this is a pilot study, and our protocol to obtain approximately 1,000 samples from Orange County -- Orange County, through this Biobank, has been approved by the Human Subjects Review Panel, the IRB Panel, so we're -- that's really good news.

We also have received approval of our application and the package from the Genetic Disease Screening Program. So they're -- so we're really set to go. Everything is on track for us to be able to obtain these samples and start moving forward. There is a question -- we can certainly start with the pilot. As we move on, and the pilot is successful, future use of GDSP will depend on funding.

And, in fact, that is one of the major focuses of our grant proposal is to use these GDSP samples as a means for obtaining a representation -- a representative population of California. And the CDC grant covers counties outside of Orange County as well, so it's expanded across the State.

One of the things that we did, based on a

recommendation from the Panel at the last meeting, is that I did inquire about having the fees of the GDSP samples waived or reduced. I have not heard back as to whether I'm successful or not. I'm pushing for having them be waived. If they're waived, that's $50 a sample, and we're talking about a lot of samples. We can probably bring in a staff person or use it for some other use. And that's the business model I presented up the chain, so we'll see what happens with that.

I think I've -- okay. So I think I've covered everything that I wanted to say about GDSP.

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DR. DiBARTOLOMEIS: I'm assuming that we might have something more to say at the next meeting, in terms of actually having samples in hand, and maybe doing some initial work. I don't know. It's hard to say.

The other two full collaborative projects, which you're very familiar with, we're in the publication stage basically. There are still some data that could be maybe picked through. But at this point, we're in the publications phase. So I just wanted to let you know where we are. The first paper has gone back and forth with the collaborators and our program. And they currently have it now, and it's in very good shape. So we're assuming that that will be submitted shortly to a

journal.

There are other publications that not only are with the collaborators, but I also know that they're -- that we're working on looking at the data in other ways to see if there are other ways to get the information out.

With regard to the firefighters, there are three publications. One has received external review and has been resubmitted for publication. The second has been just recently submitted for publication and we haven't had the peer review back yet. And the third paper is still in preparation. The third paper is on the phenols, specifically looking at benzophenone-3 elevations in the firefighters, and why they might be occurring.

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DR. DiBARTOLOMEIS: Okay. So before I sit down, I wanted to make some acknowledgements, but I also wanted to say personally that I'm really looking forward to this afternoon's session. I think, if I recall correctly, when I first was introduced as the incoming Program lead following Michael's and then Rupa's footsteps before that, I said I had a genuine interest in chemical policy and chemical regulation policy changes.

And one of my goals was to bring and integrate biomonitoring with some of the other forward thinking new legislation and programs in the State, and one being the

California Safe Cosmetics Program, and the other being the consumer products safety review and evaluation and substitution going on at DTSC.

And so this is a milestone for me, and for the Program, and for all of you sitting here, in terms of bringing what I think has been sort of siloed programs together, I think, for the first time in a discussion, at least a public forum discussion. I know it's been -- I know these programs have been mentioned here and there, but never really discussed, and so I'm really looking forward to that.

I'm always reminded of the sort of quip that people use that it takes -- overnight change in government is 25 years. I want to just tell you that on July 1st, I hit 25 years of State service. And I'm happy to say we're -- some changes are happening. So I don't think I'm going to be here 50 years, you know, 25 years from now. So hopefully other people will come and take over.

The three speakers are experts in their area. They also are broad thinkers, so I'm really hoping and I'm encouraging a robust discussion afterwards, as sort of the thinking overall about this. I'm actually hoping we'll get some specific recommendations as well, but I can't tell you what to do.

But, you know, it would be great to have some

real specific guidance or some ideas coming out of this discussion.

The other thing I want to say, there are a lot of names up there, and we don't ever distinguish those who are on grants, and those who are in kind, and those who are State funded and that type of thing. It's just a bunch of names. You know, each person has a personality and each person contributes more than 100 percent to this program, of which I and others are really proud and happy about.

But, you know, sometimes you have to say goodbye to people. And the grant, as I said, is going to be ending at the end of August, and regardless of whether we get the CDC -- the new CDC funding or not, some of them are not going to be able to return. And I just want to make a shout out to the Sequoia Foundation staff who, for over five years -- or five years -- almost five years have contributed significantly to the Program. We've made friends. They're like family and it's going to be really hard to say goodbye. So I just want to acknowledge you all. You know who you are.

And thank you for your attention. If you have any questions -- quick clarifying questions, I'd be happy to answer them.

CHAIRPERSON LUDERER: Clarifying questions.

Dr. Bradman and then Dr. Quint.

PANEL MEMBER BRADMAN: Just a very quick question. In terms of returning the results -- I should first say on a more broad level that it really -- there's been really great progress. And I think there's going to be also a need for more discussions about issues related to the changes in funding.

But without going to the big picture and focusing just on the little picture, in terms of returning results, you've -- still to do is analyzing participant understanding. Are there any -- have there been any like untoward events? Is there anything that stands out? Is there anything that, you know, raises concerns about it for perhaps on an immediate basis or is it -- has it gone smoothly and then the expectation is to move forward and evaluate really how people understood the information?

DR. DiBARTOLOMEIS: Well, you know, from my perspective, it's run smoothly. And it's because we put a huge effort into it, and we tried to cover all the bases. It's not easy. Just even putting information packages together logistically is difficult, but there's also the content and the review process, et cetera, but I don't know of any glitches.

I suppose if I would say one thing that we'd love to improve upon, but it probably has a lot to do with

resource availability, is our timeliness. From the time that we're collecting specimens to the time we actually get results back to the participants tends to be fairly long. And there's no finger pointing or bus throwing or anything like that. This is a -- it's a very arduous process to go from collecting samples all the way to getting the results analyzed, et cetera, et cetera.

So other than that, that would be improved upon, if we had more staffing and that sort of thing.

PANEL MEMBER BRADMAN: But no one called back in, you know, fear and trepidation and -- you know, or outrage or -- so there wasn't any individual responses that raised concerns?

DR. DiBARTOLOMEIS: Not that I know if. In fact, we do give a phone number for them to call. And I'm now that person on those letters, and I haven't received any calls, and I know that Michael before me and others. If anything, it would be a call for more to clarify their own particular health status, but nothing on the side of what is this stuff or, you know, we're -- is this bad or good or whatever? And I don't know if anyone --

MS. KAUFFMAN: I'm Duyen Kauffman. I'm the Results Return Coordinator. And, yes, Michael -- I'm confirming that Michael says that no one has actually called back even after receiving 45 pages of results for

eight, you know groups of chemicals.

And we've actually also sent results of people with elevated arsenic recently. And we've tried to make telephone contact. And then when we're unsuccessful, we've sent letters, and no one has actually called back for follow up. We've said we'd really like to talk to you, talk about potential ways that you could -- you've been exposed and how to reduce exposure. And we haven't had any response to that either. So I'd like to think that, you know, we've explained things really well, and people understand what we're telling them, but it's -- particularly, with the elevations, we were -- I was surprised that we haven't had anyone --

PANEL MEMBER BRADMAN: That's great. I'm just -- you know, ten years ago the narrative often on returning results was that people would be hysterical. They would freak out.

MS. KAUFFMAN: Right.

PANEL MEMBER BRADMAN: And my experience, and it seems, you know, now perhaps consistently across the program here that that's not the case. And so I just wanted to check in on that.

MS. KAUFFMAN: Thanks for asking.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: Yes. As usual, very

impressive progress. I just had a question --

MS. HOOVER: Julia, your mic.

PANEL MEMBER QUINT: Well, I just want to repeat. Impressive progress as usual. I had a question about -- and I'm very happy that you're at the point where you're writing papers and submitting them. I don't know if there is a chance for you to discuss some of your analysis and the conclusions and things like that with the Panel or present some of that here.

We get the results of the, you know, levels, but we don't hear the richness of what your conclusions are, and, you know -- and I think that would be very helpful. First of all, it's what I enjoy, but it would be very helpful for us to sort of synthesize some of this information in terms of, you know, what our recommendations might be for further studies or things like that.

So I was just wondering if you -- I know it's sensitive with publications that you can't broadcast the results in public before you actually get them published, but I was just wondering if you had plans -- how you were planning to -- or if you were planning to have some follow up on that?

DR. DiBARTOLOMEIS: So you sort of asked and almost answered your own question. You know, I can't

speak for exactly how and when it would take place, but I don't think there's any reason why we couldn't do something like that, except that there is that whole publish before you present kind of funny relationship.

Sara, is there any reason to not have something like that on the agenda?

MS. HOOVER: (Shakes head.)

DR. DiBARTOLOMEIS: Okay. So it could be -- so I think the answer would be when we're able to give a more detailed presentation of data that has been, you know, published or -- you know, and the collaborators are okay with it, not only can we present that information, but perhaps we could even get the collaborators to come in here and, you know, have a discussion about the data, if that would be helpful?

PANEL MEMBER QUINT: Thank you. Great.

CHAIRPERSON LUDERER: Dr. Cranor.

PANEL MEMBER CRANOR: I have a question about budget, but don't feel you have to answer it if it's too painful.

(Laughter.)

PANEL MEMBER CRANOR: You suggested the budget has gone down. What was the budget in good times? What is it now? The State presumably is in better shape than it certainly would have been before an election a couple

of years ago. And I know that the University of California is slightly better off than it was. And what could be done to assist the budget? Now, if it's too painful, you can say.

DR. DiBARTOLOMEIS: No, it's not painful. It's factual. So the budget previously -- actually as it was as of June 30th was $2.65 million per year from the CDC grant, which had a five-year termination -- you know, five year limit, and approximately never exactly -- I never know the exact number, but it's approximately $2.2 million of State funding from special funds, five different special funds, that is split amongst the three departments.

Now, the CDC funds are more or less going to the two departments that have the laboratories. Now, with the sunset or the end of the CDC grant, we would be subtracting $2.65 million per year. However, we have now received $700,000 for the next two years, which helps compensate a little bit. And then if we were to get the one million -- the $1 million CDC grant for the next five years per year, that brings us up to approximately a $1 million shortfall from what -- where we are at the end of the last fiscal -- of this past fiscal year.

So we are about $1 million short. And, of course, CDC funds have -- even if we had fewer limits,

they still are limited. The nice thing about State funds is, other than the mandate that we have, it allows us to grow, and it allows us to be more innovative and explore things like methods development for unknown unknown analyses and that sort of thing. CDC grant won't let us do that. That's research in their minds.

So hopefully that answers your question. What we can do about it? I told you the piggy bank will be coming around.

(Laughter.)

PANEL MEMBER CRANOR: Thank you.

CHAIRPERSON LUDERER: Any other clarifying questions from Panel members?

Actually, you kind of answered one of my questions. But just for a little bit more clarification about that, is it 700,000 in each year of the two years or spread out over --

DR. DiBARTOLOMEIS: It's 700,000 for each year. Although, the second year, for some reason, is 696,000. I have no idea where the $4,000 went. So maybe that's the little sort of finder's fee.

(Laughter.)

CHAIRPERSON LUDERER: And then I don't know, I recall a number of years ago we've had discussions over the course of several different Scientific Guidance Panel

meetings about kind of the estimated budget that would be required to do a complete population based sample of the -- you know, representative of the California population. And I recall that was somewhere over ten million per year.

DR. DiBARTOLOMEIS: That was the figure about ten years ago. I don't know if inflation would put it over -- but it's -- yeah, it's somewhere between nine and 11, I think, somewhere in there.

CHAIRPERSON LUDERER: Thank you very much. That was a very impressive overview of what the Program has accomplished as always.

DR. DiBARTOLOMEIS: Thank you.

CHAIRPERSON LUDERER: Then I would like to now take some public comments, if we do have any. I think I saw some cards.

MS. DUNN: We don't have any.

CHAIRPERSON LUDERER: Oh, we don't have any.

Then we have some time for more Panel discussion about the presentation?

Any questions, comments from Panel members?

Dr. Quint.

PANEL MEMBER QUINT: Let's see if I get this right this time. Is it on?

DIRECTOR ALEXEEFF: It's on.

PANEL MEMBER QUINT: Okay. Michael, you mentioned that no new methods development, is that correct, for this coming -- I mean, with the CDC grant?

DR. DiBARTOLOMEIS: Yes, the CDC funding opportunity announcement was pretty clear this go around. Whereas, as I guess, even though it was before my time, it was a little more flexible for the first five year grant, in that they really are looking for a sustained -- a program that's already sustained by State funding and -- or other funding and they really wanted to see data being generated to expand the national database essentially, and not use it for developing yet another method or exploring new types of biomonitoring applications.

PANEL MEMBER QUINT: I should have said my name is Julia Quint for the court reporter. Sorry about that.

I ask that, because we'll have the discussion this afternoon, and we may hear information that might lead to, you know, measuring something that we're not measuring now. So I'm just wondering in that context are we limited by what the Program is already doing in terms of laboratory effort or -- and, you know, it's okay if we are. I'm just wondering if we're brainstorming how --

DR. DiBARTOLOMEIS: So there's kind of two parts to that answer. One is that obviously because of the new information we have on the budget, the Program is now

getting together with the senior staff and leads, and we're going to be discussing actually as early as next week, the beginning of sort of prioritizing and planning for the coming year as well as the five years out.

But the answer to the question about new methods development or not new methods, it doesn't mean that we couldn't develop new methods using, you know, in-kind State funds, but we would have to give something up. I don't think we're going to be able to add something without taking something off the pallet, which is, of course, open to a lot of robust discussion, because there's questions about whether it would be worth replacing maybe a panel that we already have with another panel, or, you know, doing something that's maybe not a complete analyses every time we do specimen analysis. You know, I don't know what it would look like.

CHAIRPERSON LUDERER: Sara.

MS. HOOVER: Julia, just to clarify. Were you asking for this afternoon if you were limited in what you brainstormed, because of the limitation on what we could take forward? I just wanted to --

PANEL MEMBER QUINT: Well, I don't think you would limit the brainstorm necessarily, but I was just wondering how realistic a brainstorm you could have, if there are say a group of chemicals, something that, you

know, comes up in the discussion.

I mean with both Programs, I think there are health endpoints that we aren't necessarily addressing in the Biomonitoring Program. And if there is a way to do biomonitoring, I was just wondering, even though we bring it up, it's not realistic in terms of --

MS. HOOVER: Well, like Michael said, you know, we're going be prioritizing, like, what we want to take going forward. So I would say that that's actually part of the discussion is really figuring out regarding consumer products, are there particular chemicals, particular products, you know, that the Panel is really interested in? Like that's one piece of the discussion. And as part of that, are there chemicals that like aren't on the designated list that we should look at?

So, I think, you know, we should just think very broadly. And then there's opportunities potentially with complementary studies with DTSC. So, yeah --

PANEL MEMBER QUINT: Got it. Thank you.

CHAIRPERSON LUDERER: Any other questions or comments from Panel members?

Okay. If not, thank you very much. And then we will move on to our next set of presentations.

So first of all, I'd like to introduce Dr. Jianwen She, the Chief of the Biochemistry Section of the

Environmental Health Laboratory Branch in the California Department of Public Health.

And after Dr. She's presentation, Dr. Myrto Petreas, Chief of the Environmental Chemistry Branch in the Environmental Health Chemistry Laboratory in the Department of Toxic Substances Control will be giving us a laboratory update too.

So, Dr. She.

(Thereupon an overhead presentation was presented as follows.)

DR. SHE: Good morning and welcome, members of the Panel and audience and also Dr. Luderer.

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DR. SHE: Today, I will provide update for Environmental Health Laboratory. This includes staff changes, also our analytical method development and improvements, and third part actually is related to one of Dr. Quint's questions, can you present some data. So in my talk, I will present some limited data without sacrificing opportunity of publication, and also get approval from the PI. So some of the analytical data will be presented today. Also, I will talk about our future plans.

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DR. SHE: First, I'd like to thank you -- thank

two staff, which is Dr. Yu-chen Chang. Dr. Yu-chen Chang and -- she left us for a different program. While she was with us, she was instrumental to help us to develop the online phthalate method. And also, I'd like to thank Ms. Alanna Viegas. Alanna is our sample manager specialist. She did particular work to manage the samples, because like we needed to make sure every device we provided for a project need to be contaminant free. She also did excellent work -- you may already contact her. She's a coordinator on many projects.

And also I'd like to welcome Mr. Long Nguyen(Nu-jeen). I hope I'm right. And, Long, if you're here -- you are on the line. Long is from private laboratory and he joined us recently. And he helps Dr. Ryszard in the laboratory to do the inorganic chemical analysis.

Also, I'd like to welcome two visiting scholars, Mr. Jie Jiang and Dr. Yufeng Guan. Jie Jiang is from ShenZhen CDC PRC. Mr. Jiang is the deputy director of their analytical division. And he will be here with us for six years -- six months.

Dr. Yufeng Guan is associate professor from Southeast China University. Dr. Yufeng Guan will be with -- stay with us for one year. Two visiting scholars will work on the PAH method and help us. As you hear from

what Mike D. said, we need to find a way to sustain the Program with a small contribution. I hope that Jie Jiang and Yufeng Guan join us -- will be mutually beneficial.

Jie will work on the PAH. And then maybe leading to the biomarker of diesel, we can develop that method. And Yufeng Guan is right now working on the unknown screening. That's the work that Dr. Yu-chen took on, but she left.

So I think Dr. Guan is in the audience. Would you mind to stand up, so we can welcome you.

Thank you.

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DR. SHE: In the next few slides, I'd like to talk about our method improvement or development. The method is continually improved, because, you know, CDC keep changing. Even the grant maybe not emphasize develop new methods, but you can -- five years period of time, you cannot say, okay, CDC improved, you need to improve, otherwise data cannot be matched.

So we keep our method improvement effort on. This slide I may show you before. We -- for the previous studies, we only reported six phthalate analytes, but right now we added four more, so we can work on -- we can -- for the new project, like BEST project, we will report ten of them. This is referring to three of the

newly added analytes being biomarkers of DEHP.

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DR. SHE: This does reference slide to show you the abbreviations and the parent compounds and analytes. And again it's abbreviation.

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DR. SHE: Another area of the method improvement we are working on is -- that's like in the March SGP meeting, we had a very extensive discussion of metals. And then -- so we -- we expand our metal -- urine metal panels from right now from four. We tried to add six of them, but we successfully added five. So that's the total nine.

With chromium, we developed a method, and then the method detection limit we wish it could be 0.16 ppb, because the chromium in the general population the levels are around 0.16 to 1.0 ppb. So we need to have a very low detection limit. While we use this method, the urine, in our application, we find it very challenging for us to reach that level. So we will keep improving the method and hope we can handle the chromium in shortly -- make the method more reliable and solid. But anyway, we can do other nine of them for the BEST study.

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DR. SHE: And also as you know, we are taking on

the new method which is organophosphate flame retardant. This new method includes two parts. And we finished the first part, which is mass spectrometer part. We still need to continue to finish the separation part.

And also for the bisphenol A analogs, we developed the method. Right know, we are testing the pool urine further validate to make sure it can be used for general population.

Last time, I mentioned we developed a database for unknown screening. We called it Toxic Chemical Finder database. This database includes more than 600 toxic chemicals. We are right now with Dr. Yufeng Guan's effort, we tried to use this database to see, if we say we found a chemical, at what level we found it -- if we say we don't find it, at what level? So the concept is there's a qualitative analysis needed to be supported by quantitative information.

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DR. SHE: The next three or four slides -- a couple slides, I will talk a little bit of the analytical results. So this slide that we get from FOX study, we look for -- in the slide I show five chemicals BPA, BP-3, triclosan, methylparaben, propyl paraben. All of the five compounds were detected at more than 94 percent of the samples.

And then please be aware the Y axis is on the log scale. So the high -- two highest levels chemicals are BP-3 and methylparaben. But you can see, except BP-3, the other four chemicals, the level we find in the firefighter's study is very similar to CDC's reporting, compared with the NHANES 2009 to '10 data for the male person older than 25. This database possibly like 900 peoples. Our study population is 100.

So BP-3 actually as a level is five times higher. So we tried to find out, and then what's the cause of this high level BP-3. And we do find it is not because of a laboratory bias, because we did the other study, MIEEP, and the different study, we didn't find this kind of significant high levels.

And during the paper preparation, so we look for the age, we look at body fat, we look for the firefighter's job titles and then many things can contribute.

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DR. SHE: And in the last meeting, I really talk about HERMOSA Study, if you still remember. And HERMOSA Study was designed by our collaborator at UC Berkeley to characterize levels and the source of endocrine disruptor chemicals from personal care products in young Latina women, and also try to see if we can lower this exposure

by using different products.

EHL, through UC Berkeley, analyzed phthalate metabolites, also the environmental phenols and the creatinines.

This slide shows the results on the column 3 and column 4 pre-intervention and post-intervention results. And the P value was on the last column. You can see for few chemicals, those four chemicals we listed here, there are a significant difference before and after intervention.

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DR. SHE: We also work with -- actually, through Dr. Luderer we get contacted Dr. Yifang Zhu. We start a laboratory collaboration with UCLA Environmental Health Science Department. The goal of this study is to see -- determine PAH exposure in non-smoking taxi drivers from the greater Los Angeles area.

So they collect urine samples from 22 participants. And then before the work shift, six-hour shift, so five time collections. So each person will collect the total samples. And the 22 times means 220 samples.

At the same time, they also collect some reference samples, I guess 12 samples from the people who are not taxi drivers. There are a lot of specific

exposures to the PAH. So we just finished this 232 samples analysis, and then Dr. Yifang Zhu is digesting the data to the statistics. I hope we can report the results in the near future.

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DR. SHE: Regarding our ongoing projects, and then we right now try to finish all of the BEST sample analysis so far, I think, for blood samples. And thanks to our inorganic group, the number every day keeps changing, so 250. And actually, I heard now is we almost finished the laboratory analysis almost all of the samples. That's very great for Dr. Ryszard's work.

And then for other few groups of chemicals, for example, for OP specific metabolites, we finish all of the samples for the laboratory analysis, but we still not finish data review and give the data to the PI. So we've finished the laboratory analysis, and also for creatinine we finished.

You can see the other -- to a different degree, we finished the environmental phenol. Worst case we didn't start even for perchlorate, arsenic speciation. Arsenic speciation we need to finish all of the -- almost all of the total arsenic before we can start it. Also, we share the instrument. We need -- so but overall, we are in good shape to finish the studies.

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DR. SHE: Another study I'd like to talk about is the laboratory was requested by Orange County Health Department, they identified a 20-month old with symptoms of severe mercury poisoning. And then also they analyzed the product they used. I think the mother used a skin-lightening cream was made in Mexico. And this cream have almost 38,000 ppm of mercury. And you can see the reference, the FDA's regulatory limit for mercury is less than 1.0 ppm for the cream.

And L.A. Health Department, they also find another six households with a total of 45 people potentially also exposed to this cream.

So EHL was requested, because this person have no medical insurance, so no one can help them to analyze. So we discussed with our Division and the Biomonitoring leads, so we decided to help them.

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DR. SHE: So so far, nine samples were sent to us, five males, four females. And at the same time, I think DTSC and U.S. EPA decontaminated the house. So these nine samples were after the decontamination was done. We also -- we'll follow up for any kids or any persons with symptoms, plus on mercury level above 5 µg/L.

You can see compared to the mercury level for the

similar population, our analysis of these nine samples is really high. The levels -- six out of nine samples is above 95th percentile. So that's very high levels.

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DR. SHE: Now, I plan to just update you with what we plan to do in the next three months. We still need to finish our method development on OP flame retardant, complete the validation. And we encountered some problem on the BPA analogues. So it's taken us longer than we planned or expected, but we will continue to finish the validation.

And also, we continue our investigation on the unknown screening method. And we have completed the analysis of BEST samples. We have one pending collaboration, which is a study designed by Kaiser and Dr. Assiamira Ferrara is the PI. This is a study to look for the environmental lifestyle and the healthy pregnancies.

They asked us to look for the women with or without gestational diabetes. And it's roughly 1,800 samples, three years. So we tried to develop an MOU with them to make sure the data can be used by Biomonitoring Program, because 1,800 samples takes a lot of effort from the laboratory to do it. So we're just making sure this goes -- be mutually beneficial.

Thank you very much.

CHAIRPERSON LUDERER: Thank you very much, Dr. She. It's always impressive to see all the progress that the laboratory has made with the addition of the metals and the additional phthalate metabolites, and making progress on so many of the projects.

We have time for clarifying questions from Panel members, and then we'll have more discussion after the second presentation too.

Dr. McKone.

PANEL MEMBER McKONE: Tom McKone. You know, one of the things that you've emphasized today and in the past is the role of methods development. It's been very important to the Program your methods development. And a lot of your work as been innovation.

So we heard earlier about some of the budget is even -- well, the bad news -- or the good news is it won't be cut as much, but the bad news is there's going to be less money for methods development. Is that going to affect some of what you've done or are you actually at a point now where, you know, you're doing so much field work that methods development isn't that important to the growth of the Program?

DR. SHE: Budget definitely, like Michael D. mentioned, like CDC. I think logically CDC sponsored you, or the Program, five years, I think they expect in the

last five years you developed the basic methods, and then you should go to production mode.

And so the CDC's effort makes a lot of sense. I said okay, we want to generate more data. But like everything is dynamic. CDC keeps moving the project of -- improve the -- the methods, and then they publish certain data. They modified the value, said okay give a recommendation. So that's a balance of how the laboratory needed to take it on.

So I can see -- so like our leader already said that CDC's part, but also we have funds from State. We try to explore, like we -- visiting scholars. And we visiting scholar before, which is also very successful. So definitely, that's an impact.

Also, on the operation part, certain methods you can bundle together, and then -- as long as it's not a complete different method. Five years previous experience maybe make the method development less money cost. So as a Program, we need to balance this to see what kind of method is completely new, or is it improvement or is it expanding. So I think there will be effect on the complete new methods more, than we just bundle the method or expand our method.

CHAIRPERSON LUDERER: Dr. Cranor.

PANEL MEMBER CRANOR: Carl Cranor. On the

HERMOSA project, you had pre-intervention data, and then post-intervention data. What was the time period between those two?

DR. SHE: I think that's like, if I remember correctly -- Dr. Asa Bradman, you want to talk about it -- yeah. Thank you.

PANEL MEMBER BRADMAN: Sure. Hi. I'm a co-investigator in the project. The population was Latina teenagers in the Salinas Valley, and we did an inventory of personal care products. And then we developed kind of a beauty bar, and we provided all the participants with products that were, you know, advertised as not containing many of these substances. And then the sampling was done about three days apart.

PANEL MEMBER CRANOR: Only three days.

PANEL MEMBER BRADMAN: Only three days apart.

PANEL MEMBER CRANOR: Very short half-life.

PANEL MEMBER BRADMAN: Right. All of these are very short half-life chemicals. So the point was to look at changes over a short term, and also make sure that the time frame was good so they could comply with the requirements of the study. And all of these have half-lives in the range of, you know, hours to a day.

PANEL MEMBER CRANOR: Thank you.

DR. SHE: Thank you, Dr. Asa Bradman.

CHAIRPERSON LUDERER: Any other clarifying questions?

Okay. Then we'll move on to the next talk and then we'll have time for more discussion afterwards. So Dr. Myrto Petreas, who's the Chief of the Environmental Chemistry Branch in the Environmental Chemistry Laboratory will give us an update.

Dr. Petreas.

(Thereupon an overhead presentation was presented as follows.)

DR. PETREAS: Good morning. So the update since last March.

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DR. PETREAS: I will briefly talk about staffing changes, where we are with the analysis of our samples, where we are with our instrumentation to identify the unknowns, as we say, and other DTSC activities. These are studies or programs we do for our Department that directly or indirectly benefit the Program.

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DR. PETREAS: So first, with the CDC cooperative agreement, even though it's finishing, sometime in the spring we recruited and hired Eric Houtz. Erika did Ph.D. in Berkeley on PFCs and precursors in environmental media. So it is a great combination and we brought her on board.

And now she's working on PFCs in serum, and also continuing to looking at precursors and additional chemicals, related PFCs. So she's a great addition to the Program.

And as Dr. DiBartolomeis mentioned with the State funding with the two limited term positions coming to our laboratory, and we're in the process of advertising, because -- since they're a very limited term, we want to maximize the time that the people who may be attracted to those positions will be on and working with us. So this is moving.

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DR. PETREAS: Where we are with sample analysis. So we have completed our part on the Expanded BEST. This is a new BEST study. We did all the PFCs, the perfluorinated chemicals, for them, 337. And we completed the entire Three Generations Study that I spoke before and I'll show you some data from that. So these were 750 samples, and those serum samples were analyzed for PFCs, PCBs, organochlorine pesticides, PBDEs, and the hydroxy metabolites. And this is done.

We continue to do the analysis for again all our repertoire of PFCs, PBDEs, PCBs, pesticides for the California Teachers Study. This is the biggest study we have. And also, we'll be doing the PBDEs, PCBs and

pesticides for the Expanded BEST.

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DR. PETREAS: So a little more detail. So the Teachers Study, this is the biggest study we have. It's a collaboration we have the Cancer Prevention Institute of California, the University of California, Irvine, University of Southern California, and City of Hope. It's a long prospective study, cohort study going on for many years.

We have been funded on a sub-study to study chemicals as risk factors for breast cancer. And for that study, we have -- supposed to collect blood samples from about 1,200 cases and 1,200 controls from the entire State. So Peggy Reynolds is the PI for this study. And we've been funded by the California Breast Cancer Research Program. So again, in the idea of sustaining the Program, we'll be adding all these data.

The recruitment is still going on, and samples keep coming to the lab. The good news is incidence is dropping, so it's hard to recruit these women. So we're planning to get at least one year of extension to complete the study. So the plan is to collect the blood and analyze for PCBs, PBDEs, perfluorinated chemicals, and also thyroid hormones and lipids.

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DR. PETREAS: And just to give you progress, as of this month, highlighted are the numbers that have changed since last time. So if I can show here -- no, I guess I can't show. Oh, yeah, I can.

So the different chemical classes are in these columns, PFCs, PBDEs, and then the pesticides and PCBs. And each sample goes through these several steps until the data are released. So we made a lot of progress by distributing and separating the samples. Over 2,000 of them have been aliquoted, and the extraction changes between the different, I guess, columns.

But there's a lot of progress because we have over 1,000 samples now. The extraction is completed and 900 of those have been analyzed, but there's a lot of work to be done too -- for data review before we can release the data. But we have a deadline in the fall. So you're going to see a lot of more progress in November. So our California Teachers Study is the largest study for the Program and we're going to show a lot of progress there.

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DR. PETREAS: The Three Generations Study is also a big study. It's another collaboration, and we're funded by -- for our part of the study by the California Breast Cancer Research Program again.

Basically, the population comes from over 20,000

pregnancies that took place at Kaiser Oakland in the sixties. So these are what we call the mothers that were pregnant then. And then we have the daughters who are adults and the granddaughters who are now adolescents.

Our part of this study looks at mothers and adult daughters. And so the mothers, again, were samples archived from the sixties, but the now adult daughters were recruited and specimens taken in 2011-12. So this gives us an opportunity to compare generations among other specific aims for this study.

And once everything is completed, and the results are returned to the daughters, we have to wait for that, then we can provide the information and data and publish and so forth. And the data will be posted in our website.

What I can show you though is what we call detection frequency, because this allows us to see how certain chemicals change between generations. And I'm not showing concentrations here. It's just the percent of samples that showed the chemical to be present. So in the blue hatched column on the left is the mothers, and the daughters are in the red. And, as you can see, these are pesticides. And most all -- 100 percent of the maternal samples show the pesticides to be present.

However, certain chemicals, like the ß-BHC and the ortho,p'-DDT are present now at much, much fewer

contemporary samples. Again, we're not comparing concentration levels, just the presence of the chemical.

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DR. PETREAS: So this is for pesticides. And a very similar picture for PCBs again. Almost all mothers had the PCBs present, but fewer of the daughters do have them. And mostly the lower molecular weights here are not so persistent. The more persistent still are present. Again, I'm not showing concentrations, but I'm showing these two slides to come to the third one --

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DR. PETREAS: -- which is a different class of chemicals, which is the perfluorinated. And here, you see the reverse. We have many more chemicals present in the daughters that were not present in the mothers.

And so this is particularly true for the longer chain -- the octa, nona, deca, and undeca and so forth. These are the longer chain PFCs that are apparently more in use now that appear. Whereas, in the maternal samples they weren't even present.

The measure -- the like PFOA, PFOS, and the hexa sulfonate are present again in all samples, again not comparing concentrations. The only change is one chemical that now it's the methoxy-PFOSA, which is present in the daughters, and wasn't present in the mothers. And these

two last chemicals, apparently both were used for treating paper and fabrics to make them repellant. And probably there's a change in the market going from one to the other, and that's what we see here.

So I guess this gives us the opportunity to see trends in terms of -- and projecting how chemicals would change between generations. So it will be interesting to see the actual concentrations in other, you know, questionnaire data and see what predicts this information here.

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DR. PETREAS: Okay. Small update about our instrumentation. This is -- again, we -- the CDC agreed to give us this -- to allow us to use last year's budget to buy this instrument with the understanding that if we identify chemicals via this non-targeted screening, these chemicals may be important candidates for biomonitoring and could be added as designated chemicals.

So since last time, we bought the instrument. It was actually installed last month, and staff are getting trained this week. So we are starting. We're very excited. And, of course, we communicate with our cross-lab program TOF group, between toxicologists and chemists to coordinate the work. And we may have more to tell you next time.

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DR. PETREAS: Oh. This is a picture you can't see very well. This is our new toy. And this is the characteristic tube, which is like a chimney. So this makes -- you know, it's very exciting.

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DR. PETREAS: Okay. So some other activities that we do outside of the Program.

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DR. PETREAS: We have the study in the Santa Rosa Birth Center. This was started a few years ago. It was partially funded by U.S. EPA Region 9. And here we had first time mothers, 67 women, who were going to give birth at the Santa Rosa Birth Center. It's a health clinic. Samples were collected in 2010 to '12, and we had serum, maternal serum, cord blood, breast milk. And all these have been -- we just completed analysis for PBDEs, pesticides, PCBs, perfluorinated chemicals, and the hydroxy BDEs in this blood and milk.

And we have plans to analyze house dust and the dryer lint dust that we have from all these women. And along with the exposure assessment questionnaire, again we're going to look at predictors and what differentiates exposures.

So these were collected in 2010 to '12. And what

I'm showing -- oh, okay. And the aggregate results will be shared with the website.

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DR. PETREAS: This slide, the red bars are the data just presented. And I'm comparing with another study from the same population, exactly the same clinic, that had been done in 2003-5. In that case, we have 82 women that only gave breast milk. So here I'm comparing the breast milk from 2003 to 2010. And the 2003 study was already published.

This comparison was presented at the BFR meeting in Indianapolis last month. And indeed, we see varied -- what we expected, of course, but it's nice to see it in breast milk what we saw in blood, that indeed PBDEs are dropping, which is great. I mean, it shows the power of biomonitoring to see changes, and also that regulatory interventions do make a difference.

So we'll continue to work on this study, and we'll present more to you.

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DR. PETREAS: We have been funded, along with UCSF, to study again women from the San Francisco General Hospital. And we're going to look at PBDEs and hydroxy metabolites in serum of pregnant women. The recruitment is underway and the samples are arriving in our lab. So

the first phase with only 50 samples this year with more to come in 2015.

Again, the very interesting thing here is the demographics are exactly the same with our two previous studies that did show the drop in PBDEs in blood. So having a third point will make us even better to determine trends. Tracey Woodruff is the PI and it was funded by NIEHS. So we'll be working on that. And again, Tracey has agreed and we can post the aggregate results on Biomonitoring.

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DR. PETREAS: Now, I want to change gear and talk about dust, because we believe that environmental samples complement our biological biospecimens that we collect in biomonitoring studies. And especially, the way we use the vacuum cleaner dust, it integrates exposures over space and time. There are many ways of collecting dust, but we chose this for different reasons and we want to stick with that.

And dust really links consumer products to biomonitoring. So this is what we want to assess the environmental part. So we have two studies that we have completed, one with UC Berkeley, where we sampled over 200 homes actually twice from Northern California. This is part of our childhood leukemia study. And then in our

firefighter study, we had this companion study to take the vacuum cleaner dust from 20 of the fire stations in Orange County.

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DR. PETREAS: So where we are with the analysis, we have completed the analysis of dust for all the brominated flame retardants, not just PBDEs, Firemaster, and also PAHs. And we are in the process of analyzing the same samples for the phosphorus flame retardants, including the TDCPP and TCEP, both on Prop 65. And TDCPP is one of our consumer products -- chemicals in our Department.

We'll be analyzing the same dust for chlorinated and brominated dioxins and furans, perfluorinated chemicals and their precursors. And later on -- we're not ready yet -- we'll do the phenolics, so BPA, triclosan, et cetera. And, of course, dust will be a great sample matrix to look for these so-called unknown chemicals in the future.

So we're getting ready to do all these in-process methods, because we are getting samples from fire stations across the U.S. dust samples to do more of this work. So that will be interesting to see how they compare.

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DR. PETREAS: Okay. Now, a little bit more about

the California Childhood Leukemia Study. Again, it was with UC Berkeley. This is a case control study looking at the environmental and genetic risk factors for leukemia. So, as I said, we completed the analysis of PBDEs and PCBs and pesticides in the vacuum cleaner dust from 204 homes. And these were sampled twice over a period of five years.

We have analyzed the children's whole blood and we have analyzed the mother's serum. This was in response to a Request for Information we had issued as a Program in 2012. It is one of the studies we selected. So we completed this work.

--o0o--

DR. PETREAS: And the interesting thing we find now is that we can see major PBDEs in maternal serum are positively associated with household dust of the same PBDE levels. And this is after adjusting for blood lipid levels, country of origin, household income, which are some of the variables we know -- covariates that affect this association. So this is real encouraging. We have a paper in preparation there.

--o0o--

DR. PETREAS: Okay. Just to conclude. The two papers we mentioned last time have been finally published. The first one -- both are methodological. The first one is to -- allows us to use different blood drawing tubes,

which makes field sampling much easier. And we're using this in the Teachers Study, and we're using this in the Expanded BEST. The second paper, again, it's a better method to measure the hydroxy BDEs in serum. And we have two papers that were submitted, and they are in final review. This is the brominated flame retardants in dust -- in house dust and fire station dust.

So we got the reviewers' comments, responded. It should be coming soon. And we just submitted our first firefighters POPs paper. This is the one where we found very, very high levels of PBDEs in firefighter's blood.

--o0o--

DR. PETREAS: So with that, I think I'm done, unless you have any questions.

CHAIRPERSON LUDERER: Thank you very much, Dr. Petreas in telling us about all the amazing progress you've made on all those studies and sharing some of those very interesting results with us.

Do we have some clarifying questions?

Dr. McKone.

PANEL MEMBER McKONE: Yeah. Thank you. That was a really remarkable amount of information to digest. I was interested in the mother, daughter, granddaughter study, and the granddaughters aren't in yet, right, but they're coming, right?

MS. HOOVER: Tom, can you talk into the mic, please?

PANEL MEMBER McKONE: It's on.

MS. HOOVER: Talk into the mic.

PANEL MEMBER McKONE: Right into it. Okay.

(Laughter.)

PANEL MEMBER McKONE: All right. So on the -- so to repeat the question, so I have a couple of questions. One is the granddaughters are still in process or are they identified in --

DR. PETREAS: The Three Generations Study has mothers, daughters, and granddaughters. Our part of the study does not have the granddaughters. Because this is a breast cancer study, so it's really the adult daughters the in-between generation that is at the stage to -- may develop breast cancer.

The daughters are recruited -- the granddaughters are recruited for maybe other endpoints, but there's no funding for us yet to do anything on the young daughters -- the young granddaughters.

PANEL MEMBER McKONE: And it seems like it's focused primarily on persistent organic pollutants. You're not looking at metals or inorganic --

DR. PETREAS: We are not, no.

PANEL MEMBER McKONE: Is there a possibility? I

mean, I don't know how --

DR. PETREAS: This is blood.

PANEL MEMBER McKONE: Do you consume the samples that much or are they --

DR. PETREAS: Yeah, this is blood.

PANEL MEMBER McKONE: I mean, they have this wonderful long-term sample. I assume you're not using all of the samples.

DR. PETREAS: It's very hard to convince them to give us any, and we get very limited volume, because it's so precious. It's really amazing. This cohort is amazing. It's, you know, from the sixties and now -- and it's very interesting how the daughters and granddaughters are willing to participate. There's a lot of response to going and, you know, finding this.

PANEL MEMBER McKONE: Well, it's remarkable insight just the initial results on how the world of persistent pollutants -- there are persistent pollutants, but they change by generation, right?

DR. PETREAS: Yes. So this would allow us to see that.

PANEL MEMBER McKONE: Okay.

CHAIRPERSON LUDERER: Dr. Cranor.

PANEL MEMBER CRANOR: Carl Cranor. The same general topic. Can you tell us more about the hypothesis?

Is it that the persistent substances have been transmitted or are they new exposures or both?

DR. PETREAS: Okay. There are many study questions in the study. We're only -- in the data I showed you, they only deal with very limited subquestions, some of the predictors of these chemical exposures. Some raise effects. We had for the daughters, the adult daughters, 50 percent are African-American. So this was enhanced -- stratified sampling in a way to enhance and get more African-Americans in the pool.

So there's some interesting questions in terms of just exposures by race, plus also in utero exposure. So we know what the daughters were exposed when they were in utero through their maternal serum. So some questions we'll follow up on that. It's still the beginning. And again, I can only talk to you about the slice of this bigger study.

PANEL MEMBER CRANOR: Right. I know Barbara Cohn --

DR. PETREAS: Yeah, she's the PI.

PANEL MEMBER CRANOR: -- did the earlier work on breast cancer and daughters --

DR. PETREAS: It used to be with the mothers. Now, we're going to the daughters, yeah. And there are other endpoints, not just breast cancer.

PANEL MEMBER CRANOR: Sure.

So you're not separating those two questions or it's probably not your task to --

DR. PETREAS: Yeah, it's not our task, yeah.

PANEL MEMBER CRANOR: Thank you.

CHAIRPERSON LUDERER: Dr. Quintana.

PANEL MEMBER QUINTANA: I just had a question about the same study. And I'm just curious if you looked at best -- breast feeding practices of the mothers in terms of did it modulate the daughter's exposure. And I just want to say that question in the context that we know that breast feeding is always best for baby. But in terms of factors that may affect daughter's body burden, I was wondering if that was looked at as a factor?

DR. PETREAS: I'm pretty sure the question was asked to the daughters for the granddaughters. The original cohort, the child health and development studies, I don't believe they had this question. They had some -- maybe you know more about that. It was certain demographics, smoking and some activities of the sixties, I guess.

(Laughter.)

PANEL MEMBER KAVANAUGH-LYNCH: They have, I think, very extensive data on basically many factors in prenatally and early postnatally. So I believe they have

breast feeding data on the mothers.

DR. PETREAS: If you go to our website, it links to their study and the whole information will be there. So I can't answer now.

PANEL MEMBER KAVANAUGH-LYNCH: I want to add another aspect of this study that, I think, adds to its value. So one is that looking at the distribution amongst racial ethnic disparities amongst a fairly uniform population. These are all Kaiser patients from Northern California. So that's of interest, especially in the breast cancer disparities question is -- you know, is it a disparity partly due to differences in exposures, or in prenatal exposure, as Barbara Cohn's earlier work together with Myrto showed the prenatal exposure to --

DR. PETREAS: DDT.

PANEL MEMBER KAVANAUGH-LYNCH: Yeah -- DDT was -- resulted in a five-fold increase in breast cancer risk. And there just isn't a five-fold increase in breast cancer risk from any other factor. I mean, that's a really remarkable finding.

But the other interesting aspect of this study that we as a funder told them they needed to start to develop and now they have taken further steps and developed much further is actually making this a community based participatory research project. So they now have

a -- the mothers and the daughters and the sons involved in an advisory group that's helping to formulate questions that they want to see asked, and making them a much more vibrant part of the study.

And I think that will lead to some very interesting questions that also lead to hopefully continuation of this very valuable resource.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: Yeah, really great results, very interesting. I had a question about the PFCs. You mentioned -- could you explain again the shift? I mean, there's -- you know, what's shifted in the exposures here?

DR. PETREAS: Well, what we think it's market changes. So there are new chemicals that came into being that were not present as much when the mother's blood was taken.

PANEL MEMBER QUINT: Right.

DR. PETREAS: So these are the longer chain, the eight, nine, ten, 11 carbon chains of perfluorinated compounds that are now more in use. That's what this graph tells us.

And the last two bars, which they reverse, because this is the first time -- the very last one is -- was higher in the -- was present in the mothers, but not so much in the daughters. I think it's a replacement of

the -- these two chemicals were used both for treating fabrics and paper to make it water repellant or lipid repellant. And there's a shift in the market we think, and there's more of that than it used to be when the mother's blood was taken.

PANEL MEMBER QUINT: So -- right.

DR. PETREAS: Now, this is preliminary. We have to look at the questionnaires and other parameters to compare.

PANEL MEMBER QUINT: Exactly. Right. Interesting.

DR. PETREAS: But I think this is powerful to show you different -- how chemicals emerge from --

PANEL MEMBER QUINT: Absolutely, yeah, emerging.

CHAIRPERSON LUDERER: Before we continue with our discussion, I just wanted to check if there were any public comments.

Okay. Great. Thank you very much, Dr. Petreas.

So it looks like we have two public comments. So the first person will be Veena Singla from NRDC. Did I pronounce that correctly?

DR. SINGLA: Yes. Thank you. Veena Singla with the Natural Resources Defense Council. I wanted to echo the comments on how impressive the presentations and updates were. My comment is related to the methods

development and analysis for organophosphate flame retardants.

I wanted to note that both halogenated and non-halogenated organophosphate flame retardants have been used as replacements for PBDEs. So the -- hopefully, the methods development could focus on both of those categories and the -- any of the analysis of the abiotic or biological matrices could look at both the halogenated and non-halogenated organophosphates as emerging flame retardants.

CHAIRPERSON LUDERER: Thank you very much for that comment. And we also have a comment from Nancy Buermeyer from the Breast Cancer Fund.

MS. BUERMEYER: Thank you very much. Nancy Buermeyer with the Breast Cancer Fund.

Ditto to the great work in both the labs. Congratulations. And it's been great to watch this program grow over the last five years, and see just how amazing the methods development and the output has grown.

I actually had a question for Dr. Petreas. You mentioned getting fire -- I see that you analyzed dust from the Orange County firefighters, and you had a tag in there saying you were getting samples from around the country. And I'm curious to know from where and how do I get to play?

(Laughter.)

DR. PETREAS: Well, this is -- it hasn't happened yet, but there's interest in funding to sample -- to repeat what we did in the Orange County firehouses from different fire authorities around the country. And our contact is some firefighter's organization who approached us. And hopefully, this will materialize, and we can tell you more next time, but we don't have the samples yet.

And, in fact, in a way, we'd prefer to delay a little bit, so we have more of these methods, because we are doing the Firemaster and the organophosphates and plus others. So the more we have, the better, including the dioxins, the brominated dioxins.

CHAIRPERSON LUDERER: Okay. Thank you very much.

And we have time for some more Panel discussion about either of those two presentations.

Comments, more questions from Panel members?

Dr. Quintana.

PANEL MEMBER QUINTANA: Hi. This question is about the FOX results that were presented. And specifically, the environmental phenols slide, it presents the results in comparison with NHANES data from 2009 and 2010. And when I was listening to you I'm just wondering, have you explored comparing your results to NHANES data that has been selected to be subjects of similar age,

similar region, because I know region is not, I believe, in the NHANES data set, unless you request it specifically, and also compared to smoking status of participants or making sure they're non-smoking or have low urinary cotinine levels?

And the reason I bring this up is because I'm from California and I have this bias. Californians are healthier and different, and I don't want to miss a signal from firefighters, because we might be comparing to people with -- that aren't as good a reference group. And I'm just wondering if you've explored getting a subset of NHANES data that is matched to your data set?

DR. SHE: The data statistical analysis and also the other factors I think I will try to see if Laura is here. Do you want to answer the question?

DR. WU: Hi. I'm Nerissa Wu. We have looked at -- we would like to look at regional specific NHANES data, but it's very restricted. It used to be available and you used to be able to request it through a process. The process through which you can request is very onerous. And we've actually talked to NHANES statisticians. And because of the way they -- it's how they analyze their own data and how they weight their samples. They don't really feel -- they don't want to give out that data, and so we haven't gone through the process, because we don't think

it would be a successful effort.

PANEL MEMBER QUINTANA: But that's for region, right? You could also --

DR. WU: It's for both region and for State.

PANEL MEMBER QUINTANA: But have you looked at say urinary cotinine, smoking status, so you'd have the comparable levels in regards to some other exposures?

DR. SHE: I know one thing, then I think Laura will be able to get more information to that. We look for the smoking. Questionnaire data don't have secondhand smoking. And I don't think we find a significant association with smoking. The age part we can say that we found a middle-aged person have high levels. And then we look for all of the questions within our database. I think Laura can add more.

And then also, we not only compare with the 2009 to 2010 data from NHANES, according to Berna, recently CDC also published 2011 to 2012. So our FOX data is between 2010 and 2011. So just before I come here, I looked at the CDC's added trend, so from 2009 to 2011 identified added trend change.

Regarding other questions, I look to Laura.

PANEL MEMBER QUINTANA: Actually, just to clarify, I was talking about the NHANES comparison group looking at their cotinine and their smoking status and

getting a subset of that group.

DR. FENSTER: We haven't done that. We had really very low tobacco use in the firefighters. We did control for that in the model-building process, but we didn't see an association, but it could have been due to the small numbers.

PANEL MEMBER QUINTANA: I just -- I just meant in the comparison group in NHANES, that includes everyone in the United States with perhaps higher secondhand smoke from Kentucky than we get in California typically. So I was just talking about the reference group making sure that was as appropriate as could be.

DR. FENSTER: Right. We did try to make it as appropriate as we could. As Nerissa intimated, we've even had discussions with them about trying to get California specific data, but they -- it's very difficult at this point in time. They have done that in the past, but increasingly it seems like their biostatisticians and epidemiologists want to use that data for publications. So, yeah.

CHAIRPERSON LUDERER: Dr. Bradman.

PANEL MEMBER BRADMAN: I just want to second that. I've had similar conversations with CDC, and they're extremely restrictive. I know there was that one paper by Dr. Zota at UCSF where they did breakout some

information, but I've had follow-up discussions with them and the answer always came down as no. And I think it's a little frustrating actually, but...

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: Let me put glasses on to see if it's on. I think it's on.

This is a totally different topic. I was wondering, I mean, we've had two occasions now in the Biomonitoring Program where we've measured mercury in these cosmetic creams. And I'm wondering about -- and this may be something you have -- I mean, it's not your purview, but I'm just wondering policy-wise what's happening with that issue?

Here, we have a 20-month old who's, you know, affected by this. And I know the Program -- I'm just wondering if there's any avenue to bring this to a different -- make -- call attention to this in a different way? Claudia may know something about this. This is more her area.

DEPUTY ATTORNEY GENERAL POLSKY: Hi. I'm Claudia Polsky of California Department of Justice. And I'm an enforcement lawyer who specializes in toxics in consumer products. I'm jumping a little ahead of the agenda here by speaking to this question.

But the short answer is this is a tricky area,

because all of the products that are being used and are resulting in these, you know, meteoric levels, very dangerous levels of exposure are illegal. They're illegal under federal law. They're illegal under State law. This is -- it's not even fair to describe it as a gray market. It's a totally black market in these products.

Some come in those very make-shift almost hand lettered jars you see that are coming in onesies and twosies in people's carry-on luggage from all over the world. It's not just coming in from Mexico. It's coming in from everywhere.

We are not the only ones grappling with this problem. I've read press releases from the Philippines about their efforts to get a handle on skin whitening creams used by all manner of different ethnic communities with pigmented skin. And I am in ongoing conversation and collaboration with DPH in our State to try to figure out how we go after these very small-time onesie and twosie distributors. Some are literally operating out of a pickup truck at an ethnic flea market trying to offload 12 samples at a time.

There are some cosmetics companies that look more legit and mainstream and that they have professional printed product packaging. They're clearly producing in larger volume that are also creating things with, you

know, 50,000 parts per million when the legal limit, as you saw, is less than one part per million.

So, I mean, these are grossly illegal products. And the difficulty is that the supply chain inevitably ends overseas and the U.S. infrastructure for distribution is tiny. It's informal. It's shady. You go to a listed address, it's now a vacant space. You go to the next address, it's a vacant space. The receipts have no addresses. It's very complicated, so we're trying to figure out how to get information out to the relevant ethnic communities, so people can protect themselves as purchasers. It's not the most satisfying way to go after it, but it's very challenging. We are working on it. It's an active investigation.

PANEL MEMBER QUINT: Thanks.

CHAIRPERSON LUDERER: Other questions from Panel members?

I actually did have a question. I was really happy to see that both of the presentations included information about the progress in unknown chemical screening. And I had a question for Dr. She. You mentioned that the -- you have the Toxic Chemical Finder database has 600 chemicals now. And I was wondering is that parent compounds or metabolites or both?

DR. SHE: I think most of them are the parent

compounds that the database developed, and the recommended chemicals from Canada EPA and Dr. Derek Muir. So I think most parent compounds.

CHAIRPERSON LUDERER: So if the parent compound is in the database, then are metabolites, known metabolites, also in the database?

DR. SHE: I didn't get a chance really to break down if any major metabolites maybe there. For example, TDCPP as a flame retardant, and we look if TDCPP is there. I didn't do a breakdown. That's a good question, if we need to focus like list for urine samples or to we can put it like a metabolite, if it is not there. Then maybe a plan we should think about it.

CHAIRPERSON LUDERER: Thank you.

Dr. Quintana.

PANEL MEMBER QUINTANA: I had a question about the unknowns analysis, and that had to do with discussions about the ethical implication for research on human subjects when you get into unknown analysis or non-targeted analysis. And this comes from my experience with developing methods in non-targeted analysis of house dust for the National Children's Study, where we developed methods looking at pooled dust samples. And our database came up with every drug of abuse known to man in our pooled sample. And it just tells here's this, here's

this, here's this. We didn't ask it to.

You know, so I'm just curious if you had any discussions about any analysis where you might explicitly a priori exclude some compounds for this reason to do with analyzing the individual results, especially with sensitive populations?

DR. PETREAS: I can only -- Myrto Petreas, DTSC. I can only tell you that with the Teachers Study, where we intend to look at unknowns, the consent form is open to any chemical. So we're liking that part. So we're not going to look at drugs of abuse, but we're going to look at other chemicals.

With the dust, that's a good question. I'm not sure how the -- again, the informed consent described any regulated chemicals or illegal chemicals. But for the future -- I think it's something you're raising for the future, we have to be explicit on that.

PANEL MEMBER QUINTANA: No, I think it's excellent work. I just think these discussions should take place ahead of time and before, and how we're going to deal with that issue.

DR. SHE: I think we should think about the rules what chemical we can look, what we can't look. But on the other hand, technically, we called it unknown screening, like I mentioned it's targeted unknown. You cannot -- for

example, machine cannot automatically tell you what's there. It's really if we have a rule for this regulated chemical, the drugs, no one can see it, because when you do -- it's quite different with this isotope or the machine we use to trap, they're screening everything. But when you -- without a chemist to really look at it carefully, you do not see nothing. It's even worse. You see just the baseline, because all of the other chemical clouded the real thing you're looking for.

So at the beginning that's not a worry, but I hear what you said, the Program may need to have some deeper thinking what we're looking, because eventually if someone would like to locate it, it's there, but it's a big effort to find it. It's not complete unknown. It's targeted unknown screening, I think.

CHAIRPERSON LUDERER: Dr. Bradman.

PANEL MEMBER BRADMAN: This is Asa Bradman.

I just want to echo that comment. I think actually that's a really interesting point and just a little personal experience with that. In our study in CHAMACOS, we actually explicitly in our consent forms excluded any regulated chemicals like that. And that was, of course, a way also to ensure people would participate.

We've had some issues. We had somebody who -- there was a child custody case, and we were approached

about potentially releasing our samples or being forced legally to release our samples. And we were -- because of the consent procedures, we were protected by our IRB and the University counsel.

But I think that's just a good point for all of us to think about, especially when we're going into the world where we're not -- we're not specifically delineating target analytes.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: I just -- this is Julia Quint. I want to echo that in terms of occupational studies, because it's always been a concern of a lot of workers of having biomonitoring done, because of this issue, and how it might affect employment, the fear of, you know, people measuring for drugs, et cetera. I think I've brought it up before here. So again, glad you brought it up, because I think it's really important.

CHAIRPERSON LUDERER: Sara Hoover.

MS. HOOVER: Yes. Sara Hoover of OEHHA.

I just wanted to say thank you for these great comments. And also to repeat the plug that Myrto gave of our cross branch group for unknowns. So we're going to be looking at things like building the database, making sure metabolites are in there, also what samples can we look at unknowns in. It's been previously pointed out these

aren't designated chemicals, so we're not just going to go out and start applying this method.

So we are, you know, doing a planning process within the Program, but all of these comments will really help with that. So thank you.

CHAIRPERSON LUDERER: Any further Panel questions, discussion, comments?

Okay. Well, it looks like we're going to be finishing a little bit early then. Do we still want to plan an hour for lunch or what time?

1:00. Okay, returning at 1:00 then. So, everyone, please be back --

MS. HOOVER: Stop. Refer to your Chair's agenda, Ulrike. We have a few announcements before we break.

CHAIRPERSON LUDERER: Oh, yes, we do. You're right. I apologize. Yes. So I just want to -- so we just said that we're going to be returning at 1:00. I also want to recommend that the Panel and meeting attendees choose from dining options at the Oakland 12th Street City Center Shopping Plaza, which is near the BART Station. There's a lot of quick options there.

And I wanted to introduce Fran Kammerer, the Staff Counsel for OEHHA, who will provide a brief reminder to Panel members about the Bagley-Keene Open Meeting Act before we break for lunch.

STAFF COUNSEL KAMMERER: Thank you, Dr. Luderer.

CHAIRPERSON LUDERER: And I'm sorry to almost have skipped you.

STAFF COUNSEL KAMMERER: That's all right. All this exciting science and here comes the lawyer to rain on your parade, but I'm not the only lawyer today.

(Laughter.)

STAFF COUNSEL KAMMERER: Claudia gets to talk about the fun stuff. I get to rain on your parade. Okay. So I want to remind you of more than one thing today. Normally, I give you the reminder to refrain from discussing subjects that are from the Committee -- that will be discussed at the Committee at lunch.

And I want to expand that a little bit today to remind you that this also applies for when you meet at other events. So because you're all in the area of science, you're bound to meet in conferences and trainings and so forth. So just remember to try to refrain from discussing matters that will be coming before the Committee at these events.

The second subject is ex parte contact. Sometimes you will be contacted by interested parties who want to talk about something that's going to come up before the Committee, or share a study with you or something like, you should refrain from doing that. But

if you do do it, especially if you do it during the notice period before the meeting, you need to disclose that here and say who made the contact and what the subject was.

Also, if these meetings do occur, what do you do? Well, you can ask them to bring the subject to the meetings. Contact our staff, if they want to share any studies, or anything like that, they can bring it to the meeting.

Any questions on that?

Okay. Thank you.

CHAIRPERSON LUDERER: Lunch. Okay. Thank you. So remember we'll reconvene at 1:00 p.m.

Thank you.

(Off record: 11:49 AM)

(Thereupon a lunch break was taken.)

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

(On record: 1:01 PM)

(Thereupon an overhead presentation was presented as follows.)

CHAIRPERSON LUDERER: I'm going to reconvene the meeting while we're waiting for everyone to come back from lunch. So I'm very excited about this afternoon's session, which we've already heard quite a bit about, little teasers about it this morning.

So this afternoon's session is going to consist of three presentations and discussion about chemical exposures in consumer products. The first presentation is going to focus on California laws governing chemicals in consumer products. The second one will highlight a particular case of nail products. And the third will discuss the potential for Biomonitoring California to inform the Safer Consumer Products Program.

So probably for this audience, I don't need to say that you've probably been wondering why a session focused on chemical exposures from consumer products? But I think it's -- there are really a number of reasons why this is a very timely topic. I just wanted to highlight a few.

So we know that the indoor environment plays an important role in our exposures to environmental

chemicals. And the consumer products that we use in our homes, our offices, our cars are major sources of chemicals in that indoor environment.

In particular, personal care products are things that we use on a daily basis and that are applied directly to the body, so obviously increasing the potential for repeated and continuous exposure to chemicals found in those products. And I also wanted to kind of highlight that tracking exposures to chemicals in consumer products has been a particular focus for the Scientific Guidance Panel I think really since its inception.

And one of the things that the Scientific Guidance Panel has been very interested in is emphasizing emerging chemicals of concern. And so, yes, the slides are up.

So the two slides highlight chemicals that are found in consumer products. The first one focuses on personal care products that are designated and priority chemicals for Biomonitoring California. And also the asterisks indicate those chemicals that were recommended by the Scientific Guidance Panel as designated, and then as priority chemicals. So the highlighted ones now, the bolded, are those that were recommended by the SGP as priority chemicals.

So I wanted to just say a little something about

some of these chemicals. So the cyclosiloxanes that was I think one of the earlier class of chemicals that this SGP recommended. These are used in many personal care products, household cleaning products, dry-cleaning solutions. Some of these are persistent in the environment. And with these, there's concern for reproductive and endocrine effects.

Skipping parabens for a moment. The triclosan and triclocarban are used as antimicrobials and are in many handsoaps, tooth pastes, and other household and personal care products. And benzophenone-3, which we heard about this morning a bit, is, among other things, a sunscreen component.

The parabens are also used in personal care products. They're also antimicrobial preservatives. And for many of these chemicals, as I mentioned already for the cyclosiloxanes, there's evidence for reproductive, as well as endocrine effects potentially for some of these compounds.

The synthetic polycyclic musks and related fragrance compounds are in personal care products -- many personal care products, as well as other household products, things like detergents. And again, there's evidence for those for developmental toxicity and endocrine activity.

Okay. So -- oh, sorry, next slide. I'm like pushing my slide here.

(Laughter.)

CHAIRPERSON LUDERER: Your slides are not -- okay.

(Laughter.)

CHAIRPERSON LUDERER: The brominated and chlorinated organic compounds, as well as some of the non-halogenated aromatic phosphates are used as flame retardants. And these have been, for a long time, also of particular concern to the Scientific Guidance Panel as we actually saw data this morning that -- as some of the PBDEs are being phased out.

And the Scientific Guidance Panel initially was particularly concerned that these might be even a greater problem in California than other parts of the United States, because of the California Technical Bulletin 117. And this -- that things like upholstery foam had to be able to withstand an open flame for 12 minutes. And we know that last November, that was revised. And so now, there's a smoldering -- withstanding a lit cigarette without smoldering for 45 minutes.

And so it will actually be very -- this is going to be I think an interesting example of where biomonitoring can be used to see the potential effects on

chemicals, such as these other -- these flame retardants in Californians, and how that might change or not change in response to changes in the law.

The p,p'-bisphenols and their diglycidyl ethers are used to make resins that are used to line food and beverage containers. They're in thermal paper, other paper products. They're in other plastics. And many of these have been promoted as replacements for bisphenol A. And so again, here's another opportunity to use biomonitoring to track these emerging chemicals that may potentially be of concern, and for which there's far, far less toxicity information than there is for bisphenol A.

So overall, I think there's a general public perception that products that are available in the marketplace that you can buy at your grocery store or drugstore have been extensively reviewed and approved and must therefore be safe, but we know that this is not necessarily true.

And so biomonitoring chemicals that may be of concern in consumer products, the Program can really provide important information for policymakers. And this is also an area something that we also heard about a little bit this morning that consumer products are in an area in which individuals can have some control over their chemical exposures. So it's harder to change where you

live or to change your occupation, but you can choose different products. And as we saw with the example of the makeup, the HERMOSA Study, that you can reduce exposures to certain chemicals.

So a key goal of this session is going to be to discuss how Biomonitoring California can inform other unique California programs, such as the Safer Consumer Products Program and the Safe Cosmetic Program and vice versa.

And I just wanted to, for the Panel, highlight a few questions that you might want to think about as we listen to these presentations this afternoon. So what are strengths and weaknesses of using biomonitoring to assess chemical exposures from consumer products? Are there additional chemicals in consumer products that we should consider in the future as potential designated chemicals -- so chemicals that are on not yet on that list -- for Biomonitoring California? Are there particular consumer products with specific ingredients of concern that might warrant targeted biomonitoring studies? And what suggestions do you have for how the Program could best collaborate with other State programs to help identify and assess chemical exposures from consumer products?

So those are things to kind of keep in the back

of your mind as we listen to the presentations.

And now, it's a great pleasure to introduce our first speaker. So our first speaker is Ms. Claudia Polsky. Ms. Polsky is Deputy Attorney General at the California Department of Justice. Her current work focuses on addressing the human health impacts of toxic chemicals. And her docket has encompassed toxics litigation under federal pesticide law, the California Safe Cosmetics Act right to know Proposition 65 law, Congressional testimony on implementation of the Stockholm Convention on Persistent Organic Pollutants, and ongoing work as advice and litigation counsel for multiple California agencies working to address toxic threats.

Ms. Polsky has been with the Attorney General's Office since 2000, with a detour in 2008/2009 to serve as Deputy Director for Pollution Prevention and Green Technology in California's Department of Toxic Substances Control.

Ms. Polsky is going to be speaking to us about biomonitoring and consumer products regulation in California.

Welcome. Thank you.

(Thereupon an overhead presentation was presented as follows.)

DEPUTY ATTORNEY GENERAL POLSKY: Greetings. I'm

delighted to be here today. I already learned an enormous amount, and I'm looking forward to sharing what I know about State authority over chemicals in consumer products. And I think this authority defines a regulatory space to which biomonitoring can add an enormous amount of value.

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DEPUTY ATTORNEY GENERAL POLSKY: I want to begin by noting that the California biomonitoring statute enables the Program to do a whole lot of things that have very little relationship to consumer products. And I'm very excited about all of those potential uses, and I hope I get to come back and talk to you about those another day. But I think this is a great moment to be thinking about how biomonitoring can inform consumer product regulatory programs.

And it is definitely one of the things that motivated the legislature to establish this Program. In the part of SB 1379 that is not codified, the findings that don't end up in the law books, the Legislature expressly said that one of the purposes of biomonitoring in California is assessing the effectiveness of current regulations and helping to set priorities for reform. And that is really the thrust of what I want to talk about today, what is the practical use of all of this data?

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DEPUTY ATTORNEY GENERAL POLSKY: So who regulates consumer products in California?

It's actually many, many more agencies than most people think. To start off with, everything sold in California is subject to a federal regulatory floor. A whole bunch of different federal agencies, the Consumer Products Safety Commission, EPA, the FDA, represent different subsets of the articles we use, like bicycles and washing machines, and then the formulated chemical products, like floor waxes and cosmetics.

But in almost all instances, those federal laws really are just a floor. The State can regulate more stringently. Sometimes, we get in trouble if we try to change the nature of the label of a product that's sold in national commerce. But if we're talking about the substance of the product, how is it formulated, what does it contain, or whether or not it can be sold in our State, we have a lot of leeway to make our own rules.

And there are many agencies with a piece of the action. And I'm going to describe some of these pieces of jurisdiction today. And this is not a comprehensive list.

And I submit that the States are only going to get more and more active in this area. They are going to get more and more active for reasons probably familiar to all of you policy watchers, which is that the federal

government has had an incredibly difficult time in its ongoing effort trying to reform both the cosmetics title of the Food, Drug, and Cosmetics Act, and the Toxic Substances Control Act.

And so I would like to be more optimistic. I'm not. I've been working on this for more than seven years, so I don't think progress is really in sight. And I think the State's are going to be the theater of action for a long time.

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DEPUTY ATTORNEY GENERAL POLSKY: So I think that biomonitoring data can inform a variety different State programs. And I also think that those programs can help give very helpful focus to some of our biomonitoring efforts. Many State agencies are trying to regulate toxics in consumer products, based on what are pretty much best guesses about what's driving exposure. And they could benefit from much more granular data.

And conversely, I think this Program has the capacity to generate a huge amount of data, but people are not necessarily aware of every place it could have a regulatory implication, or where, for example, there is a coincidence of timing. That means there's a real opportunity for regulatory change if we had the data to support the change.

And then aside from this Program and all of the different regulatory agencies, there is a third leg of the stool which was mentioned in Dr. DiBartolomeis's presentation, which is the legislature on whom the Program is dependent for support and funding.

And those appropriating money for programs typically want to know what difference they're making in the real world. You know, why does this data matter? What will change if we have this answer?

And I think focusing on consumer products, and particularly some of these before and after regulatory intervention stories can make a very compelling case to the legislature.

And I want to emphasize, you know, especially to any industry listeners in the room or via web, that this is not a one-way ratchet. Biomonitoring data I don't think will always tell us that we need to have a more pervasive regulatory state. I really think of it much more as a prioritization tool. Are we focusing on the right things? Are our guesses right or wrong about different sources of exposure?

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DEPUTY ATTORNEY GENERAL POLSKY: There's a tremendous amount of overlap in terms of agencies that can regulate a particular product. I was holding a bag of

microwave popcorn yesterday, and I was thinking, oh, my goodness. DTSC regulates the toxics potentially in the ink in the product's packaging. Occupational health authorities, you know, regulate whether or not there's too much diacetyl exposure to workers and they'll develop popcorn lung. Once you get to the actual ingredients of the popcorn, you know, both FDA and potentially DPH can tell you whether or not it can be artificially colored yellow.

Then, of course, DTSC can jump in under its Safer Consumer Products regulations now and tell you whether you can use perfluorinated chemicals to line the bag and make it nice and waxy. I mean, it's really sort of mind-boggling how many people touch that popcorn, and yet, you know, may or may not be -- meet the safety standards we would like it to. There's a lot of overlapping jurisdiction.

And so as a lawyer, I find it somewhat exciting, because there are often many ways to go at an exposure problem or an enforcement problem, but it's also really complicated, because you have to understand how all these regimes intersect, and your tools to reduce exposure are not often, you know, what you think they will be.

And just to give a very, very short example. I know I don't have a lot of time. When I worked with DPH

on a case regarding hair products that caused tremendous formaldehyde exposure to salon workers, exposure that was so high that it was not just above Prop 65 limits, it was making people acutely asthmatic and so forth.

It turned out that the best way ultimately to address the problem and get the product reformulated was through the Air Board's VOC regulations. You know, the amount of VOC emitted by the product actually violated numerical limits, and a lot of the other regulatory regimes we had to work with were much squishier.

Now, before we move to the next slide, I actually just want to assuage a fear that will arise because you're going to see a lot of text, and that's sort of lethal on a PowerPoint slide. And you're even going to see regulatory and statutory citations, for which I apologize. But I was asked to provide a legal overview, which is hard to do without grounding it in legal authority.

So I just want to assure you, I'm not going to read these slides to you. These are just in your materials for your reference if you think I really don't remember, you know, where this authority derives from and you want to consult them, but I want to tell a somewhat different story than is on these slides.

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DEPUTY ATTORNEY GENERAL POLSKY: The State agency

that I -- has very expansive, maybe the most authority over toxics in consumer products now --

MS. HOOVER: Claudia, hang on. We're having a technical problem. Apparently, the webinar can't see.

DR. PLUMMER: Sorry about that.

DEPUTY ATTORNEY GENERAL POLSKY: Is that it? Is it fixed?

MS. DUNN: Yeah.

DEPUTY ATTORNEY GENERAL POLSKY: Okay. Thanks. So DTSC has very broad jurisdiction over toxics and consumer products. It has historically always had onesie/twosie jurisdiction over particular things that the legislature identified for action, like the toxics end-product packaging that I mentioned, mercury in thermostats. But a few years ago under AB 1879, as you all know, the Department of was really given, for the first time, the latitude to define its own objects of regulation, what worries you, what should be the products and chemicals we prioritize for regulation?

And there's a detailed regulatory scheme that Dr. Williams will talk to you about later, but -- I'm actually on the wrong pages of my notes here.

But one of the things that's interesting to me, because of the timing of this enactment, is that it's really the first statute, and especially the first set of

regulations in California that expressly contemplate that biomonitoring data will help set our priorities.

So the statute says, you know, DTSC's regulations should consider, in establishing priorities, the potential for exposure to chemicals in a product.

Well, of course, biomonitoring data does that one better. We're not just demonstrating the potential. We're demonstrating actual exposure, so that the case is made. And then DTSC's regulations say that where chemicals have been identified for biomonitoring, either federally by CDC or in this State, these are automatically chemicals that can be regulated in consumer products.

And again, Meredith will talk about this more later, but in two of the three cases of initial products that DTSC has now proposed for regulations, the existence of human biomonitoring data was one of the rationales for prioritizing those products.

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DEPUTY ATTORNEY GENERAL POLSKY: CDPH, the Department of Public Health, has an enormous amount of jurisdiction over certain consumer products, including cosmetics. It has actually a lot more jurisdiction than I think most people realize, because it hasn't had the resources to exercise it. I think there's a tremendous amount of potential energy that could become kinetic with

more resources.

But DPH, in the cosmetics arena, has the authority to require companies to disclose hundreds of carcinogens and reproductive toxins in products sold in California. The list is slightly more expansive than the Prop 65 list, but it includes all the Prop 65 chemicals.

But then what's really interesting is that going beyond establishing that list, CDPH has the authority to review information and then ask all sorts of questions of a manufacturer. This is information that's hard to get at, things like sales and use data for products sold in salon settings. I think we could do a lot with that combined with evidence of actual exposures experienced by salon workers. Again, this is largely unexercised authority, because of resources, but there's quite a bit of potential.

And once DPH makes a determination as to what seems safe or unsafe, it also has authority that is very FDA-like to ban or restrict all sorts of substances. We really can make our own law in this area.

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DEPUTY ATTORNEY GENERAL POLSKY: The Air Resources Board has very substantial jurisdiction over consumer products. Many people do not realize that and it's why I hesitated when I said DTSC may have the most

expansive jurisdiction. DTSC perhaps has most discretion in terms of the breadth of the universe it can regulate, but ARB regulates hundreds of chemicals in hundreds of different applications. I mean, literally things as diverse as degreasers and cooking spray, you know, grease and non-grease, and for several different reasons.

The Air Resources Board is concerned about VOCs, of course, especially in Southern California, because of smog concerns, but it also regulates toxic air contaminants for human health reasons more directly. And then it can even regulate products, because they contribute too much to global warming, broad heat trapping capacity.

And this is a great moment for the biomonitoring program to engage in I would hope a really much more formal regularized way with ARB staff, because ARB at this exact moment is engaged in tremendously broad consumer products survey, and many, many product categories. It's going to give us lots of data about what's used in the State in what volume, and then ARB will deciding what to regulate. Again, lots of opportunity to do some before and after monitoring and to help inform priorities.

And just in one example, I was talking with ARB consumer products staff about, you know, where would biomonitoring data really make a difference to you?

And an example they gave me was in this toxic air contaminants arena. What happens is once ARB designates something as a toxic air contaminant under law, ideally it ultimately proceeds to something called an Air Toxics Control Measure. And I'm sure many of you are familiar with these. They're pretty technical documents. A familiar one is probably the air toxics control measure for formaldehyde from composite wood products, which has changed the market quite a bit, and ultimately became essentially a national standard.

But ARB needs a lot of data to support those standards, those control measures. And, of course, those measures are often challenged, and even litigated. Often ARB doesn't have the data to establish a direct control measure. So, for example, when ARB, to reduce VOCs, established certain limits for paints and coatings, which are, you know, a big VOC releaser, they found that manufacturers were inclined to reformulate. One of the ways they were inclined to reformulate was to add methylene chloride, which was lower VOC, but of course had other environmental impacts.

And so ARB said, well, as a mitigation under the California Environmental Quality Act, because we do have to address environmental side effects of our actions, you know, we're going to specify that you can't increase

methylene chloride. But it was a very indirect way to go at the problem, because they said to me, you know, we just didn't have the numbers to establish an air toxics control measure directly for methylene chloride. We couldn't come at the problem frontally. And so I think there are many ways that their work can be enhanced and refined with biomonitoring input.

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DEPUTY ATTORNEY GENERAL POLSKY: DPR has a lot of jurisdiction over consumer products in the State. We often tend to think of pesticides as mostly an agricultural issues, but of course people spray Raid to control roaches and ants in their home. People put Off! on their children to prevent insect bites. People put antifouling paints on their recreational boats so they don't get barnacles. There are lots of consumer product pesticides.

And DPR has the ability to cancel or refuse the registration of a pesticide for use in our entire State if it finds, for example, that there are serious uncontrollable adverse effects, or if it finds that the pesticide is of less public value or greater detriment to the environment than the benefit received by use.

Well, how are they going to make that showing?

They're going to make that showing because of the

kind of data that a biomonitoring program can generate. And I just provide one example here, which is that DPR has actually banned the sale of certain pesticide products based on animal biomonitoring data showing that certain of these second generation anticoagulant rodenticides posed hemorrhage risks to, among other things, endangered animals in California.

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DEPUTY ATTORNEY GENERAL POLSKY: OEHHA and the Department of Justice both have roles with respect to Prop 65, which I'm sure is a statute well familiar to all of you. One of the things that may be a little bit invisible is that public enforcers, and in particular the Department of Justice, have a special role with Prop 65, which is evaluating whether private lawsuits really have merit to them.

And we get provided with a variety of confidential information by private plaintiffs who want to bring Prop 65 suits trying to substantiate the case that there is a level of exposure that requires a consumer warning. And often, we don't have the data to make that judgment call.

And this is another area in which I think biomonitoring data can really help us. If somebody submits an expert declaration to us that says there is

this level of lead in imported Chinese candy, this is what the limit is for lead requiring a warning, that's pretty easy for us to evaluate a straightforward case of ingestion of something that we know quite a lot about.

If an expert submits something to us and says we think a plausible exposure scenario is that the average toddler spends 20 minutes a day mouthing a computer circuit board, we say, huh, you know, I'm not so sure you're really above the threshold. That is a made-up case, but it's not too far from, you know, the outer bounds of what we see.

But there are many, many things in between those extremes of legitimacy and ridiculousness, and it's hard for us to assess without knowing what products are really driving exposures.

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DEPUTY ATTORNEY GENERAL POLSKY: There are many other agencies that indirectly affect our consumer products. There's also already been much discussion today of the Home Furnishings Bureau of the State, whose flammability performance standards have had the incidental effect of introducing a lot of halogenated flame retardants into our home furnishings.

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DEPUTY ATTORNEY GENERAL POLSKY: Even more

obscure is the Office of the State Fire Marshal, which actually approves a whole different universe of chemicals without examining their toxicity for use in things like flame retarding circus tents, and theater draperies, and the reunion structures, you know, the fabric tents erected for your college reunion. There is a profession of people who goes around spraying a variety of chemicals about which we know almost nothing. There's a pretty interesting potential biomonitoring study to supplement what's been done through FOX with firefighters.

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DEPUTY ATTORNEY GENERAL POLSKY: And so my real hope is that as all these California agencies come to understand and engage in these product regulatory exercises, there will be much more regularized lateral communication. I'm not suggesting some horrible bureaucratic super structure to complicate everyone's life, but I do think a regular set of conversations at staff level can help pull regulatory expertise and also create a real back-end market for this biomonitoring data, and, you know, a set of agency allies who will go to the legislature and say this is how the Biomonitoring Program is actually helping enhance our work.

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DEPUTY ATTORNEY GENERAL POLSKY: I just want to

switch for two seconds to a different theme from today, which is kind of the converse of what I've been talking about, because I've been saying, you know, really one of the key values of biomonitoring data is to help make sure that we're doing our regulatory work effectively, that we can set limits at the right levels, but the other thing I think is that biomonitoring data can -- non-targeted screening can really help show us what we're missing entirely.

And this is a weird slide to put up, because this is, of course, not non-targeted screening. This is extremely targeted screening for one -- you know, congener of one particular brominated flame retardant. But to me, without biomonitoring data, I think nobody ever would have guessed that upholstered furniture could be a very big driver of toxics exposure in the average California household. I don't think that is intuitive at all.

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DEPUTY ATTORNEY GENERAL POLSKY: And so I think biomonitoring data really can, you know, in the context of a non-targeted screening program, help make sure that we're focusing on the right things.

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DEPUTY ATTORNEY GENERAL POLSKY: This says end, but I'm not quite at the end, because I actually, you

know, want to say what I think is probably the most important thing about the utility of this Program. And I want to pick up on something that Dr. Petreas said before. She framed it very well.

She said, you know, regulatory interventions really do make a difference. I think biomonitoring is one of the very few programs in California that has the capacity to tell good news stories really effectively. And I think that is something that government is terrible at, as a general proposition.

People tend to think of regulation as burdensome and amorphous and expensive, and they don't tend to connect it to an ultimate point, which is protecting public health and the environment.

And I submit to you, if you showed any sane libertarian a graph of the blood lead levels in America before and after the banning of lead in gasoline, you would have a convert to the regulatory state. I mean, you simply cannot look at the graph and say we didn't need government. This wasn't the right thing to do. Okay. The downslope is so steep you could ski on it.

And I think you have the capacity to generate stories and graphics like that over and over. I saw some incredibly persuasive slides like that this morning. You know, the decline in PBDE levels. Okay. Well, we're

substituting other things that may not be great, but there are really impressive things to show. And I also want to just give a shout-out to the ARB in this capacity, because the ARB is an agency that has done a really fantastic job of doing before and after ambient environmental monitoring, depicting it graphically, and showing that its regulations make a huge difference.

And so I would really encourage you again in forming these lateral partnerships with agencies that regulate toxics to think about the story you're going to tell, to think about what you're trying to prove, to think about the ways biomonitoring data show that we're actually making California healthier.

Thank you.

(Applause.)

CHAIRPERSON LUDERER: Thank you very much. That was really interesting and informative overview of all the complicated legal network within which this resides. So we have some time for Panel and audience questions now, about ten minutes, to take some specific questions. And then we're going to have a lot of time for discussion at the end of all three presentations. So any Panel members?

Dr. McKone.

PANEL MEMBER McKONE: Turn it on, talk close.

Is it working?

Ah, there we go.

It's really interesting. A lot of good ideas. The one question that came up for me is you didn't mention much about the Water Board and their jurisdiction in terms of consumer products that go down the drain, end up in water supply, or end up in septic tanks, potentially contaminating shallow groundwater. Is there -- I mea, I can give you one.

I do some work with ARB on consumer products, and we're looking at consumer products that go down the drain and then end up being volatilized in publicly owned water treatment facilities, which is a pathway to get them into the atmosphere under ARB jurisdiction. But I was really curious about the Water Board's jurisdiction on consumer products down the drain.

DEPUTY ATTORNEY GENERAL POLSKY: It is a great question, and I can't give you a good answer, except that in most cases Water Board jurisdiction is more indirect. I was -- for example, we could also talk about Cal/OSHA and ways that things that can monitor can indirectly lead back to, for example, regulation of professional use products, but it's fairly indirect.

And so I was having trouble finding examples of super directability to control product composition, but it may be just that I'm ignorant. So I'm happy to be

educated.

CHAIRPERSON LUDERER: Any other Panel member questions?

Any questions from the audience?

Oh, Julia. Dr. Quint.

PANEL MEMBER QUINT: Great presentation. I really enjoyed it. I was just wondering if you ever -- for Prop 65, do you have any idea of some of the products that have warnings? This is -- I mean, it's a big question. You know, there are people -- I mean, there are products that are supposed to have Prop 65 warnings that are the subject of lawsuits, for instance, I know, where they haven't disclosed.

And I'm wondering if there's -- do we have any information on any of the products that -- of any kind, either the ones that are subject to litigation or, you know, where people are identifying because they don't have the proper warnings, or do we have any handle at all in terms of Prop 65 warnings about what chemicals are in them or, you know -- do you understand my question?

DEPUTY ATTORNEY GENERAL POLSKY: I want to be sure that I understand. Is the question do we know which chemicals are the subject of the warnings, which are often quite vague? It often says something like this product contains a chemical known to the State to cause cancer.

Do we know what the underlying chemical is or do you have a different question, which is are there --

PANEL MEMBER QUINT: I'm trying to get at this -- I mean, the problem for all of these programs is finding out where the chemical is. I mean, it's this detective story of where -- what product does the chemical reside in? I know for everything that I work on that's the question. So you're searching material safety data sheets and doing a whole number of other things to find out where the chemical is.

So I know that people have to warn for Prop 65. So my question was -- is simply, is there anything -- I mean, can we match up at any point a product with a chemical that's on the Prop 65 list, and I suspect not?

DEPUTY ATTORNEY GENERAL POLSKY: Sure. Yeah, let me go -- let me go at that a few ways and see if I can answer the question. There is a weird asymmetry that occurs that goes as follows:

When somebody issues a notice of violation to a manufacturer or seller of a product, and that person is alleging you should have warned me because your product has something that is on this list, or has more than one chemical that is on this list, that notice of violation, which is a public document -- they're posted on the Attorney General's website no matter who issued them.

That document has to identify the chemicals that are the subject of the warning. It can't just say you have some thing you should be warning me about.

But ultimately, let's say that case is litigated or more likely it's settled -- most of these cases settle -- the manufacturer agrees to put a warning on, the warning text that is authorized by statute does not require that the chemical be specified. And so you end up with something pretty vague and uninformative in public space, but there is a way to drill down and figure out what the chemical is.

Usually, though, we have a lot more questions about the level of exposure than we do about the nature of the chemical that triggered the lawsuit and the warning. And in many, many cases, particularly in the consumer product universe, you know, we have absolutely no idea of what degree of contributor that particular product source is to somebody's body burden of that chemical, or, you know, ambient concentrations of that chemical. Most of these chemicals are things that are in a lot of things. Phthalates would be a great example. You know, does somebody have phthalates in them because of, you know, I.V. tubing or because of mouthing plastic toys or because of food contact packaging or, you know, a million different things.

So does that partly answer the question?

PANEL MEMBER QUINT: Yeah. I mean one of the things about -- I mean, it is true that you don't know how much the chemical is contributing to body burden. But the good thing about a lot of these regulations, including the Safer Consumer Products regulation, is hazard based as opposed to risk based, so -- and we are interested -- I mean, one could prioritize, just based on a chemical being in many, many products, so you're having cumulative exposure.

So, you know, I worry less -- I know for Prop 65 the level becomes the issue for the litigation, but I think in general, we're concerned about hazard and focused on hazard for a lot of these things. And having phthalates in multiple consumer products would trigger to me prioritization of phthalates just based on the fact that you can get them into your body in a lot of different ways.

DEPUTY ATTORNEY GENERAL POLSKY: That's a good point. And let me just say two things in response to it. As to your sort of narrow question about the subjects of Prop 65 warnings and so forth, I know OEHHA is working on, you know, potential warning regulations that may or may not add specificity, but, I mean, that's sort of an active conversation how to make warnings more useful.

But separately, you're alluding to something really important and kind of philosophical, which is that all these different State regulatory regimes, I was running through very quickly, have sort of different undergirding philosophies. And Prop 65, at least with respect to non-drinking water discharges, is, you know, very risk management based. You know, it's not hazard based.

You look at something like the California Safe Cosmetics Act, which says, look, these are the chemicals you have to disclose. We don't care what percentage they exist at. It could be 0.001 percent. If it's an intentionally added ingredient, you have to tell us. Well, that, to me, suggests much more of a hazard frame of mind, so they're not philosophically consistent.

CHAIRPERSON LUDERER: Okay. Thank you again.

We're going to move on to the next presentation. And as I said, we'll have lots more time for discussion and questions afterwards.

So it's a real pleasure to introduce Dr. Thu Quach, who is a research scientist and the Cancer Prevention Institute of California, a nonprofit research organization. Her epidemiological research focuses on the influence of environmental and sociocultural factors on the health of immigrant populations and other

disadvantaged communities.

Thu has led a number of studies on the booming nail salon workforce, comprised mainly of Vietnamese immigrants. In 2010, she returned the Asian Health Services to become the inaugural research director at this community health center working on multiple clinic-based and health care research projects.

She also oversees the Community Services Department, including various community engagement and outreach programs. She serves on a number of committees, including the National Institute of Occupational Safety and Health, NIOSH, Service Sector Council, and the steering committee of the California Healthy Nail Salon Collaborative.

Welcome, Dr. Quach. We're looking forward to your talk.

(Thereupon an overhead presentation was presented as follows.)

DR. QUACH: Great. Thank you so much for having me here. I have to admit I'm a little bit nervous. It's quite an awesome crowd.

So my presentation is going to be a bit different. It's going to focus more on cosmetic products, and particularly nail care products and how they apply to a worker population that we think is highly exposed.

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DR. QUACH: So just really briefly, cosmetics are widely frequently used over long periods of time. We often start using them as babies, you know, in baby washes and all such. And then, you know, I think for women, it's average that women probably use about 15 cosmetic products per day. I don't even want to begin to count how many products I've used this morning, but, you know -- and for men, we've really seen an increase in what they're using. So this is a major concern in terms of their use.

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DR. QUACH: But, you know, one of the things that comes up is that despite the use, there's been very little, if any, regulation -- I should say very little, because there's some, as Claudia's pointed out, but it really falls short.

Cosmetic falls under the U.S. Food and Drug Administration, but the FDA has -- does not have the legal authority to require pre-market testing of products by manufacturers to ask for necessary information from the industry for FDA to conduct its own pre-market testing, and that products sold for professional use doesn't have to have the ingredient level -- labels on them.

This is a big concern, because we often know that worker populations are probably the more highly exposed

than the general population. And in many ways, the industry has no incentive to conduct toxicity testing, especially when it comes to long-term health effects like cancer.

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DR. QUACH: Now, all of this, as well as all the stuff that's been happening in Europe in banning some of these compounds, has really inspired some groups to really look at California as well as the nation and try to apply some more regulation. I think some of the organizations and individuals are in this room who really pushed for a bill, the Migden bill, back in 2004/2005, I want to say. And it established -- it actually passed. There were several bills on the floor, but this one passed, and we were really happy.

But what it did was established the California Safe Cosmetics Act. And this Act has reporting requirements -- I think Claudia spoke about it a little bit -- has reporting requirements that apply to cosmetic companies that make more than one million annually in worldwide aggregate cosmetic sales, companies with their name on the label of cosmetic products sold in California after 2007, and products that contain an ingredient identified as a known or suspected human carcinogen or reproductive toxicant.

So it was a big deal when this was actually passed. It was an even bigger deal when this actually got implemented, and that we're seeing some of it -- some of the data come out.

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DR. QUACH: I think in late 2013 or even very early 2014, we saw the launching of the website, and this was such a big success in terms of having this data available to the public, part of a right-to-know piece.

However, with this -- so this website is nice. You can go on and kind of look at what's in -- if you look up like red lipsticks and such, you can see what's being reported, and I really want to emphasize reported. And there's been major concerns about underreporting an issue, and then around issues around what, you know, cosmetic companies are claiming as trade secrets, so that they can't reveal that. But it really limits what a consumer knows is going into their body when they use these cosmetics products.

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DR. QUACH: So switching gears slightly, I want to focus a little bit more on nail salon workers, why the interest in this workforce?

So in the last few decades, there's been a rapid growth of nail salons. And many of us, you know, walking

down the street will really see sort of many salons, you know, popping up. Sometimes you see two or three on the same street, you know, in competition with each other. And there's -- it's sort of the -- what they say the more inexpensive luxury that people can go in and get their nails done. And it's become very, very popular.

So in California, as well as in many states, in order to provide nail care services, as well as hair care services, and other cosmetic services, you actually have to be licensed by the State. And to be licensed, you have to go through so many hours of beauty school training.

So in California, as of 2014 -- I mean, as of 2010, I believe, there was 114,000 licensed manicurists, someone who is licensed to provide just nail care services. There were over 300,000 cosmetologists, someone who's licensed to provide both hair and nail care services. So it's a huge, huge workforce.

Vietnamese, based on some of the estimates that we've done, comprise about 60 to 80 percent of the workforce in California. So it's very relevant to this discussion.

The vast majority of the workers are women, often women of reproductive age. Although, I have to say that I've been seeing a lot more men working in the nail salons.

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DR. QUACH: These two graphs actually show you data that I was able to obtain from the California Board of Barbering and Cosmetology. And it's a licensee file. So anytime someone gets licensed, it enters into the data. And I was able to get it going back from 1970 to -- through 2005. And you really can see in Figure 1 sort of the steady growth of cosmetologists over time. But over on the right-hand side, manicurists, you know, the rise really took off in 1990.

And the shaded area are those that we presume are Vietnamese based on their first and last name. So you really see that this workforce is really making up a large proportion of the manicurist workforce.

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DR. QUACH: So there's a lot of complexity when you talk about this workforce. Many of them don't have the typical employee/employer type of relationship. They're often brought on as independent contractors or, what we call, booth renters renting a small space in a very small salon. And so they aren't protected by -- you know, they aren't protected by some of the laws of OSHA and such. And they also may lack some of the employee health benefits. Although, with the Affordable Care Act, we're hoping some of that changes.

What's interesting to us is it's a small business sector, so it's different from your big companies or you're dealing with maybe the big employer and you're trying. Often times, these are -- the owners are workers themselves. They're really hiring their own family members and their own friends into the salon to really work in a very small profit margin.

There's also concerns -- major concerns about the workplace hazards. They're not exposed to just one or two chemicals. They're exposed to many different chemicals over long periods of time. They're working eight to ten hours, often seven days a week. And this really adds up over many years, in some cases.

The salons themselves are poorly ventilated. They're small spaces. I've gone into very small salons that probably maybe the size of a small bathroom, and larger salons too. So they really range in size, but overall they're not huge.

And, you know, as I mentioned, there's really limited or lack of product labeling, which really limits information of what compounds you're being exposed to.

One of the things I want to raise is the fact that many of these workers are immigrants from Vietnam, and -- and in other parts of the country, I would say that there are immigrants from other countries as well. So

there are major language barriers and cultural factors that really impact whether they understand some of the limited information that's available to them.

I have to say that one of the sources of information come from, what you call, the Material Safety Data Sheet. And I read through those. And as someone who has a Ph.D., I don't always understand them. So you really wonder whether this -- the immigrants themselves can understand this, even when they're translated.

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DR. QUACH: So this is a very abbreviated list of compounds that are used in nail care products. And you can see that there are some compounds that are of major concern for us. I've highlighted dibutyl phthalates, which I'll go into a little bit more.

And they have -- they're used in from nail polishes to nail polish removers. They have different health effects, anywhere from endocrine disruption to cancer causing. And I note endocrine disruption just because we're worried about the long-term impacts when you affect the endocrine system, particularly for hormonally mediated cancers, like breast cancer and such. And the routes of exposure are often multiple routes.

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DR. QUACH: I do want to note that dibutyl

phthalates, methylene chloride, and toluene I've starred because of its relevance to the biomonitoring discussion.

So in the work we've really claimed -- we've really coined this term the toxic trio when it comes to some of the chemicals that are used in nail polish. It includes dibutyl phthalates, formaldehyde, and toluene. And you can really see on here I outline why they're used in the nail polishes, but as well as some of the health impacts that we're concerned about.

And over time, as the work has really pushed around disseminating the knowledge around toxic trio, there's been more and more nail polishes that have come out that have phased out these toxic trios. Although, there are some that claim that they've phased out and we've learned otherwise. And so those are the trickiness when it comes back to the lack of regulation, when it comes to what's in these products.

But overall, there's been really -- efforts that go beyond regulation, but really pushing to get companies and manufacturers to want to phase out really hazardous compounds.

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DR. QUACH: So now I'm going to talk about some of the research studies that I've -- I and my colleagues have conducted over the years.

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DR. QUACH: So we really started off right around 2004/2005. We were hearing a lot of concerns coming from the community, particularly Asian Health Services, which is right down the street. Many of their staff were going out and doing health education into salons. And we were hearing back from the workers that there were a lot of concerns about the chemicals that they were using, the smells that they were experiencing.

And they were going also into see their doctors and noting that they were getting a lot of skin irritations and such. So there was a lot of interest. And at the time, I was -- and so I was working with Dr. Peggy Reynolds. And my focus had been on, you know, environmental and occupational exposure. And with my work and relationship with Asian Health Services, we decided to collaborate.

And we put in a grant that was funded by the California Breast Cancer Research Program for a pilot study to just really understand what's going on with this workforce.

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DR. QUACH: So in our study, we did two focus groups of over 200 surveys to really understand, you know, what are their concerns, what are some of the hazards that

they face?

And we found from our research that half of the salons were poorly ventilated, meaning that they don't have a ventilation machine or they don't have ways in which they had two, a door and a window, that's being opened to allow air exchange into the salons. Eighty percent of the workers were reporting health concerns due to their work with chemicals -- with products, nail care products. And nearly 50 percent of the workers were reporting acute health systems like headaches, dizziness, difficulty in breathing, and skin irritation. So there was a link we thought to the chemicals that they were using.

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DR. QUACH: So we got a follow-up study with the California Breast Cancer Research Program. It had two parts to it. One of it was to really link the licensee file that I mentioned earlier from the Board of Barber and Cosmetology to the California Cancer Registry to really see what the rates are and compare them to the general population.

Our results were that we didn't find any excess cancer risk for any of the sites, but we did note that the workforce was fairly young and that the latency period, the time in which they actually started working and the

time that we actually had the data on cancers was quite limited. So there really needs to be an extension of the study to really see more.

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DR. QUACH: The second component -- and I want to note that this was back in around 2007 and '08, was really hard to get into the salons, but this was the first air monitoring study that we conducted with about 80 workers, each of them measured multiple times from different -- from 20 different salons for the personal air monitoring. And you can see that badge in the picture that they're wearing during the workshift. And then we also did area monitoring in a few of the salons.

And what we found was overall that toluene levels were twice as high as what's recommended in indoor air. I emphasize the recommended, because if you use the standards, occupational standards, we felt that often it was too high, and wasn't really giving us insights into the protection of these workers who were really spending so much of their time in the salons. In terms of the area monitoring, we did find methyl methacrylates. And there's a lot of concerns when it comes to methyl methacrylate.

And then we were concerned about the different compounds they were using, so we also measured TVOCs, and those levels were higher as well. And in terms of the

acute health systems about -- over a quarter of them were reporting uncomfortable health symptoms.

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DR. QUACH: So now I want to talk about a study that we have ongoing, an intervention study, funded by the National Institute of Environmental Health Sciences. It's a study that we creatively, I think, entitled KHOEDEP, KHOE is healthy and DEP is pretty, but you can see that the acronym really stands for something.

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DR. QUACH: It's a randomized control trial. And the idea is to really evaluate the effectiveness of the train-the-trainer intervention.

Now, here we really looked at the owner and worker dynamic. And we really knew that we had to work with the owners to really encourage and promote behavior changes within the salon. So we actually recruit nail salon owners and train them and have them turn around and train the workers to really promote salon level changes.

And then to evaluate, we conduct personal air monitoring, as well as surveys to understand it. This gets rolled out throughout the State in four different regions listed there. And you can see the flip chart pictures is that it's a very easy-to-use type of training, you know. You're presenting to the audience, and in the

back there are sort of the notes that you can read off of.

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DR. QUACH: There are five things that we really promote which is using less toxic products or alternatives that are safer, or without the toxic trio; ventilation of stations; protecting your hand and face through personal protective equipment; and then just basic things around how to store and handle products properly, and then practicing healthy work habits, like really taking breaks outdoors and such.

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DR. QUACH: So the study design is that we actually recruit the salons, randomize them into an intervention group and a comparison group. And then the intervention, which includes the owner being trained and then them turning around and training their workers, is done with the intervention group. And then for the comparison group, we do a delayed full intervention.

We do three measurements, one right -- one at baseline, and then a second one, after the owner gets trained, but before they've trained their workers, and that's partially because we want to understand if we do see a change, is it about the owners themselves having control of the salon and making these changes or is it do you really have to go into the worker and that's where the

last measurement comes in?

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DR. QUACH: So now I want to touch upon some of the research gaps and emerging products that are of concern for us.

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DR. QUACH: In terms of research gaps, I think we always struggle with better exposure assessment. You know, how do you go beyond the single chemical? So a multiple chemical approach, and understanding sort of the synergistic effects and potential predispositions for certain populations.

Tying exposure to sources. I think this was a discussion earlier. How do you know what you measure and how do you tie it back to the products? And I think that's a big, big issue, not just for regulation, but also in terms of what you're promoting with the workers. Can -- once you do these measurements, can you go back and tell them, you know, really avoid this product or limit how it's being used, so you can really reduce your exposure. If we don't know, I'm not sure what we're going to be able to tell the worker population.

And then I think biomonitoring, particularly in the case of phthalates, provides some insights into that, and I'll go into that a little bit more.

As an epidemiologist, I think there's always a need for more longitudinal studies that look at things like respiratory, reproductive, and cancer. The cross-sectional approach is going to be always limited, because the ones that are really sick we believe have left the workforce. You're really going to a healthier population.

Then there's issue around the long latency periods that we face when we looked at the cancer risks, and then the lack of reliable and relevant health surveillance data. We have cancer, but what if a lot of this is really related to some of the reproductive concerns. Can we really get at that. I have a study where we're looking at birth records, but birth records only contain so much in the data. We're not looking at sort of the developmental issues that the growing child can face as a result of exposure -- in utero exposure.

And then I think in working with a population, whether it's this population or any other, you really have to consider, you know, what's your health messaging? What's the effective way of messaging it?

Because at the end of the day, it does apply to these workforces and these populations that you're serving. And I think that they really are a powerful stakeholder. We talk about changes in policy, but I think

it really comes strongly to the policy. The data itself may be there, and you may be able to present your case, but I think the workers and the impacted population really have a powerful way in which they can influence policymakers. And we've seen that happen multiple times in trying to engage these workers into some of the policy discussions.

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DR. QUACH: And the concern that I want to bring up is, you know, in dealing with the cosmetics industry, it's constantly changing. We've seen crazy -- I want to say really crazy nail care services where they put little fish in your pedicure and they're eating up your dead skin. I mean that's the kind of stuff we're seeing here.

And then we're seeing new products emerging from -- in this industry all the time. And one of the things that we raise is an example with the gel polishes. This is the new fad. You know, you put gel polishes on. It's not like -- supposedly it's not like artificial nails, but it stays on your nails much longer than the regular manicure and pedicure does.

However, you know, they're really claiming this is the safer way, because it's really applied just like nail polishes, but we're concerned because there's methacrylates in there. And then after you apply it on,

you stick your hand under a UV light to have it really set. And to take it off, you really have to put on so much acetone, about 15 minutes. So you really wonder what false sense of security they're giving to the consumers and the workers, in terms of creating these.

And we're always trying to catch up with this industry and trying to -- the proof of burden really falls on the government and on researchers to really prove that they're unsafe.

In terms of the regrettable substitutes, this is something that we're also struggling with. And I bring up triphenyl phosphate as something that people are saying is a substitute for dibutyl phthalates.

I'm not as familiar with this, but they're saying that there's an increase in some of the products. It's concentration in the products that may indicate that it's being used in place of DBP. There's probably more research in that area, but we're constantly facing this issue.

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DR. QUACH: In terms of the research challenges, I note that there are challenges, but I have to say that it's pretty rewarding working with this population, in terms of sort of their motivation. You know, it started out really hard. It's an intense amount of work that goes

into building the relationships, because you really don't just look at this as an immigrant worker population, but also the fact that it's the small business sector. And there's certain things that you really have to consider, like the small profit margin, the language barriers, the cultural issues, and the risks that you're really posing when you go in and try to work with them. They're always feeling that it's a threat to their livelihood.

I think the owner and worker dynamics is a big issue. And then we've seen a high turnover of workers in salon businesses, which I think, you know, with the economy, this is just something that happens, but that means retraining a lot of the workers and owners whenever we do this education. And we -- I want to note, because I think this is relevant, it's a distrust of government, whether it's because of their own personal experiences in their homeland or because of their own interactions with inspectors.

I want to say that nail salon workers they haven't had the most positive experiences with inspectors coming from the Board of Barbering and Cosmetology, so there's going to be a fear. If you're considering using this -- working with this population to do biomonitoring, you know, you're going to have to address the issue that government isn't the first group that they may go to and

trust. And then I think the issues around low literacy, especially in chemicals, is really big.

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DR. QUACH: In terms of research opportunities, I think raising awareness with this workforce has been something that's very empowering for them. Biomonitoring, I think, is -- can provide a lot of insights. I think in the case of occupational, it's really interesting, in that there's been studies out there where you can go in and measure the phthalates in the urine samples, the metabolites in the urine, pre-workshift and at the end of the workshift and subtract the two, and to really isolate what they're being exposed to when they're working.

And I think that gives you a little bit more insight into the products and such, and the sources of the exposure, which when you do with the general population it may be a little bit harder. And then when you have sort of the occupational exposure, and then with survey data, you might be able to isolate some of the products. It gives you a little bit more, even though it's not ideal, than if you were going to go in and do it with the general consumer population.

And then I think that the effective communication is something I want to emphasize. If you can engage the workforce into this issue, I think that you really can

affect change both at the individual as well as sort of the consumer and the policy level.

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DR. QUACH: I think that's all I have for the slides.

(Applause.)

CHAIRPERSON LUDERER: Thank you very much. That was a really interesting presentation. And highlighting the nail salons is a really great case example.

So we have now about ten minutes again for clarifying questions.

Dr. Cranor, and then Dr. Bradman.

PANEL MEMBER CRANOR: Sorry. Carl Cranor. A quick question, you did a cancer study. You thought the latency period hadn't run. How long was your cancer study from exposure to a study?

DR. QUACH: I think because a lot of the workers entered into the workforce about 1990 and 2000. And with the California Cancer Registry, we only had data from 1988 to about 2005, you can see that's a pretty narrow field. So a lot of times the latency was about ten years or so.

PANEL MEMBER CRANOR: Okay. Thank you.

CHAIRPERSON LUDERER: Dr. Bradman.

PANEL MEMBER BRADMAN: Again, I thought also that that was an excellent presentation. And I really learned

a lot today, so don't be nervous.

(Laughter.)

PANEL MEMBER BRADMAN: I actually had a question about this cancer risk as well. Was that -- this was an epidemiologic analysis?

DR. QUACH: Um-hmm.

PANEL MEMBER BRADMAN: But if you look at some of the things you've measured, and you do it on a risk assessment basis, you know, what are the risks based on those measurements? Would they suggest an increased risk for cancer or --

DR. QUACH: So if I had my perfect study, you mean, and then I was able to measure some of the exposures, I think that has always been a problem, because if you look at the exposure and the latency period, you would have to follow them over long periods of time.

What we did in that study was more of a secondary analysis. And we took, in terms of the fact that they were licensed by the Board of Cosmetology and they're relicensed, so looking at sort of their exposure period based on tenure of license year, it's kind of difficult.

PANEL MEMBER BRADMAN: But I mean a little bit more -- there it goes. Just more purely on a risk assessment basis. In other words, if you looked at the exposures, you look at the potency of the -- you know, the

slopes for those chemicals, if they're available, do the risks come out as high on a toxicological basis?

DR. QUACH: And I have to say I'm not a toxicologist, so I wouldn't be able to answer that. But what we've been really concerned about is the timing of the exposure and also that a lot of the exposures do affect the endocrine system. So if you are looking at things like breast cancer, I think it's very relevant.

PANEL MEMBER BRADMAN: Yeah.

CHAIRPERSON LUDERER: Dr. McKone.

DR. QUACH: Before we start, can I just go back to that one more time? I think a lot of times people are looking at like how much someone is exposed to at that time, and measuring it that way. The concern with this workforce isn't just about the level of exposure, but how long they're being exposed to. And so even this whole idea about, oh, but it's low level, which is what we're constantly being told too, I really challenge, because we don't know the health effects, and there hasn't been a lot of research in this area.

PANEL MEMBER CRANOR: Well, this is a comment, and maybe it leads to our further discussions, but on one of your slides you talked about methyl methacrylate. And this is a very interesting chemical, because, you know, a lot of this is focused on cancer risk. And one of the

things that we miss in looking at some of these things is if you become sensitized, you can -- most people are not sensitized to methyl methacrylate. But if you do become sensitized, it is used in making poly -- what is it? -- polymethyl methacrylate. And you go, well, what is that?

That's used in fillings. It's used in artificial lenses. It's used in replacement hip joints. It's used as a grout in surgery. Anyone who is sensitized to PMMA, or methyl methacrylate, then is cursed with having a lifetime of problems in going into any kind of surgery, because they're going to reject it.

And, to me, I know cancer is important, but think about what a burden that is to a population that suddenly will be sort of prohibited or will be really restricted in what kind of surgery they can go through. And our whole surgery -- you know, our whole system now is built on these replacement parts, and they're all using PMMA as a fairly standard compound.

I learned about this at UCSF. I mean, they're doing some work there on sensitization. And I raise it because there are simple techniques to look at who's being sensitized. Not just if they're getting precursors to cancer, but this is -- for some chemicals that are widely used in our -- in surgery and medicine and our economy that we're all going to be exposed to, that's a real

burden. That's a disease burden we haven't thought about is the sensitization. And you can test for it, you know, with fairly simple skin tests.

DR. QUACH: I think the issue of methyl methacrylate has been something that we're struggling with all the time. So it goes back to the fact that MMA has been banned in its 100 percent monomer form. And so when we found out about this, and we really encouraged the workers to really avoid this product, the substitute is an EMA. But what's concerned is once it is used together, so the liquid and powder form that's used to create an artificial nail bed, and it's filed down, what we're measuring in the salons is that the monomer is still there, and so workers are still exposed.

And I agree with you that not just looking at cancer and even reproductive effects, but some of the other respiratory and sensitization and skin irritations are really major concerns and can put someone out of work, as well as expose their families when they bring home a lot of the work on their clothes and such. So there's concern not just for the workers, but those that they -- that live with them as well.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: Julia Quint.

Yes, I just want to emphasize that, because

I've -- I am actually on the Research Advisory Committee for the Nail Salon Collaborative and have looked at a lot of material safety data sheets for nail polishes and other products. And I think asthma is a real concern in this industry, both the artificial nails. Now, they're going to the gel nails. And the gel nails have polymethyl methacrylate as a major ingredient.

And so there's a real potential, I think as you mentioned, for asthma. And it's one of the areas that we don't -- there are no animal tests for asthmagens. So, you know, we don't have the list that we would have for other chemicals. And when I alluded earlier to, you know, health effects that we're not looking at now in the Biomonitoring Program, I had asthma in mind, because it's also the focus of our Safer Consumer Product regulation. One of the chemicals as isocyanates.

So it's -- yeah, I think it's really -- and those workers are the ones that define health of a worker, because they leave the workforce. I mean, if you can't breathe, you're not going to stay. So you aren't capturing all the people who are potentially affected.

And even though we have surveillance for asthma, we know from the Occupational Health Surveillance Program that we are picking up only a fraction of what's out there.

DR. QUACH: And couple that with a population that has limited access to health care and such, I think that really the underreporting of asthma is a major issue, when you're looking at studies focusing on asthma.

CHAIRPERSON LUDERER: I just want to add one quick thing, and then -- it's just that also when someone becomes sensitized to a chemical, then very low levels of exposure are a problem. And that's, you know, something that you alluded to, that the levels of exposure may not necessarily be low in the sense of that's safe.

Dr. Cranor.

PANEL MEMBER CRANOR: Yeah. Thank you. Carl Cranor again.

The comments here about asthma suggest an interesting line of research that you might want to consider. The researchers, the immunological researchers say at Cornell and related people that work with them, are suggesting now that like neurological problems, immune system problems -- immune systems have one chance to get it right. And if they get it wrong at the outset of life, it can skew their immune reactions for a lifetime.

And you might want to, to the extent you can, consider pregnant women that work with these things and what happens to their children if we have an immunological effect here that then gets passed to the developing child,

then that child, as it becomes an adult, has a lifetime of problems, perhaps.

DR. QUACH: I think that -- I mean, thank you for the suggestions. I mean, there are many things I want to do when it comes to research with this population. And, you know, pregnant women is definitely one group.

It's been interesting in another study that I have, where we actually took the licensee file and linked it to the birth records of those born in California, just to look at what we can in terms of the birth records. We already saw some interesting finding. It's under review right now, so I don't want to talk to much about our findings, but it's been interesting that there is something there.

I think it would be great to do a follow-up study with pregnant women and watch -- and really observe them during -- through the pregnancy and to really enroll their children into a study.

PANEL MEMBER CRANOR: Apart from the immune system, of course, the developing child is the most vulnerable of the species typically. And you may see a whole batch of problems.

But I mention the immune system, because the researchers that focus on that suggest there are two organ systems that have one chance to get it right, so that they

function more or less normally over a lifetime, and the immune system is one of them. The neurological is the other.

DR. QUACH: Thank you.

CHAIRPERSON LUDERER: Okay. Do we have maybe a couple minutes if there are any questions from the audience?

Yes.

MS. DUNN: You can stay there. This is from Trudy Fisher.

MS. FISHER: Hi. Trudy Fisher. Yes, I just wanted to address the notion of low level exposure. I think one of the hazards, in addition to problems with people who have been affected leaving the workforce, is also problems with people leaving the workplace, because the more you come and go, I think the body really has trouble. It's not just sensitization, but it tries to accommodate, just like the eyes get used to low level light after awhile, or the nose gets used to an extreme odor or something, after awhile the body doesn't really know how to regulate itself.

And so I think there -- this side of cancer, there are some other things to raise as a specter, a sore throat that doesn't resolve. I know you mentioned skin irritation. But some of the factors, like specific types

of sleep disruptions, or cognitive problems that maybe they can't articulate, but if you were asking the, you know, pointed questions about it or something, I think there's definitely a trend with this kind of ongoing low level exposure.

DR. QUACH: I just want to say that I think that's very relevant to this population in terms of nail care services, it's really a seasonal thing. You get your toes done when the weather is nice and hot, and, you know, you wear open-toed shoes. So there is a lot that we see in terms of workers really working through the summer, through fall, and then the winter going into another line of work, because there is no business, so the issue about really changing work environment.

And then if a certain area is going down, what they do is they move salons. So they're constantly trying to adjust to different work environments.

CHAIRPERSON LUDERER: All right. Thank you very much.

All right. Now, we will have our last, but certainly not least, presentation.

MS. HOOVER: I think we have a break.

CHAIRPERSON LUDERER: Oh, do we have a break?

Oh, we do have a break. Okay. Sorry. I just keep jumping ahead. I really want to hear that last

presentation.

(Laughter.)

CHAIRPERSON LUDERER: So we have a 15-minute break. So it's about a quarter after 2:00, so we'll reconvene at 2:30.

(Off record: 2:14 PM)

(Thereupon a recess was taken.)

(On record: 2:30 PM)

CHAIRPERSON LUDERER: Everyone, please take your seats. We're going to get started again here.

We're starting again.

Okay. Welcome back, everyone. Now, we're going to move on to our third presentation of the afternoon. And it's a great pleasure to introduce Dr. Meredith Williams, who joined the Department of Toxic Substances Control in December 2013 as the Deputy Director overseeing implementation of California's new Safer Consumer Products Regulations.

Dr. Williams has expertise in research and development, product management, and operations for Fortune 500 technology, consumer product, and chemical companies including Applied Materials and 3M.

After nearly 20 years of corporate work, she applied her skills in several positions over seven years at the San Francisco Estuary Institute, SFEI, a nationally

recognized center in support of aquatic resource management. She directed the environmental data, information, and technology team in developing systems and online tools to facilitate effective data-driven decision making.

In 2013, she served as SFEI's Interim Executive Director. Dr. Williams strives for collaborative solutions to complex problems, and has a track record of championing interdisciplinary approaches to the application of science to policy and decision making.

So I'd like to welcome Dr. Williams who's going to tell us about informing safer consumer products decisions through biomonitoring.

Dr. Williams.

(Thereupon an overhead presentation was presented as follows.)

DR. WILLIAMS: Thank you. And I wanted to say that I am a big fan of the gratuitous picture.

(Laughter.)

DR. WILLIAMS: And as I was taking BART over this morning, I was actually wishing for a picture of Sam walking off into the fog talking about the beginning of a beautiful friendship, because I think we've talked a lot about the collaboration overlap today, and I really hope that this is the beginning of a conversation about how

biomonitoring links to the Safer Consumer Products Program, and how we can support one another. So I really appreciate the opportunity to be here and speak about that a bit.

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DR. WILLIAMS: So today I'm going to do a little bit to reiterate the four bullets that Claudia had on her slides. She had the four bullets that outline what our process looks like in terms of how the regulations work. I'm not going to spend too much time on that I hope, but just give you a sense of how things fit together.

But the important part of the process that I'm going to talk about today is the product selection process, and what that means, and how we do it, and how we make our decisions. And then hopefully just set us up for a great conversation about the linkages between biomonitoring and other regulatory programs and where we go from here.

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DR. WILLIAMS: So with that said, I'm going to talk about the regulations themselves. As I said, there are four bullets. The first bullet is the chemical selection, the identification of the chemicals upon which we make our decisions.

Those chemicals are -- there's a universe of

chemicals out there, and we've chosen a subset of those chemicals based on authoritative lists. I'll talk about that in a second. And then we choose our products. And we don't just choose consumer products. We have to associate those products with chemicals, so it's a product chemical combination. And from that universe of consumer products, which we all know is rather daunting, we will select priority products, and, in fact, have already begun that process.

And then once we've done that, we ask the manufacturers or the importers or the retailers to consider alternatives, to really ask that fundamental question behind these -- this whole set of regulations, which is, is it necessary to use the chemical that's in this product to make the product meet the consumer need?

And after they decide what alternative they would like to pursue, we then finally make a regulatory decisions and give them a regulatory response.

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DR. WILLIAMS: So as I mentioned, I'm going to start -- spend a little time on the candidate chemicals. We have approximately 1,100 -- it's 1,100 chemicals on our list. Our list is a list of lists, which does include the Biomonitoring California priority chemicals list. It also includes the chemicals on the fourth -- I'm not going to

get it right. The CDC Fourth National Report on Human Environmental -- Exposure to Environmental Chemicals, I believe it's called. I'm not going to get it right. But we do have lists that are very relevant to the biomonitoring group and to NHANES.

And, of course, there are other restrictions that we must be consumer products, which means no pesticides, no prescription drugs. It is a dynamic list. Obviously, as those lists get updated, our lists get updated. So that's how the chemicals list works.

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DR. WILLIAMS: We then associate those chemicals, select chemicals with consumer products, and then we ask for an alternative analysis from the responsible entities, the manufacturers, or other responsible entities. And in that process, they do look and propose safer alternatives hopefully. And again, we're really trying to avoid regrettable substitutes, unintended consequences. This is the fundamental shift that's associated with these regulations is to get away from that paradigm.

And so the alternative analysis and all the documentation that goes into that really should not just be informing our decision, but also the manufacturer's decision about how they're going to move forward. And we always talk about asking them to show their work.

We really want to know what their thinking is, what their rationale is, how they're justifying their decisions. So that's what goes into the alternatives analysis. And there's a great body of knowledge around this particular area, the alternative assessment community of knowledge, and we are relying heavily on that.

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DR. WILLIAMS: Lastly, we have the regulatory response. I've listed them there. You have them in front of you. And I will say, I'm not going to go through them, but it's just one indicator among many of the flexibility and the breadth of this set of regulations.

We have to make a lot of decisions. We have a lot of choices. And although you will hear repeatedly in the popular press that we are about to ban certain things, it's a pretty deliberative process, and banning is just one of many options that we have in terms of how we respond to the proposed alternatives in the chemicals that we name.

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DR. WILLIAMS: So I'm going to dig now into our priority products selection process --

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DR. WILLIAMS: -- and talk about it.

There are two fundamental principles that are

called out in the regulations. One is the potential exposure to the candidate chemical in the product of interest, and the second is the potential for that to have a significant widespread and adverse impact. And that's it. I mean, that's really what the regulations tell us.

Now, there are a lot of factors that go into making that determination.

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DR. WILLIAMS: I've listed all of those out. I'm not going to walk through these, but again, the idea is just the breadth of things that we need to and can consider as we make our decisions. This is a lifecycle based approach, which is we will consider materials extraction, all the way to end of life and disposal of the product, reuse, recycling, et cetera.

And the other reason I share this list with you is because you will recognize so many of the factors that are listed here, because they are very similar to the kinds of considerations that you wrestle with in terms of determining the direction of biomonitoring for the State.

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DR. WILLIAMS: So that should be -- and the other thing I want to mention here is that there's -- because biomonitoring has been wrestling with these factors much longer than we have, it does allow us to learn and not

have to reinvent the wheel. So we greatly appreciate that.

With that said, we did announce three initial priority products. These are the proposed products that we'll begin to put into regulation this fall. The first is paint strippers and varnish removers with methylene chloride. The second is the children's foam padded sleeping products, which includes things like bassinet foam or nap mats, and other products where infants or children can be in close contact and inhale dust or have dermal exposure to the Tris when used normally.

And then the third one is the spray polyurethane foam system with unreacted diisocyanates. And as you -- as we've already touched on, these are things -- these are chemicals that are already -- under discussion. I was very happy to hear the discussion about sensitization in general. Respiratory sensitization is a big concern with the diisocyanate -- with the -- sorry, with the diisocyanates. And so that possibility of that first exposure not being problematic, but of course repeated exposure resulting in occupational asthma is very problematic.

And the other thing I'll mention here is people think consumer products, but one thing that we're really trying to bear in mind is the sensitive subpopulations.

And again, this list represents a focus on a couple different sensitive subpopulations, children obviously, but the worker communities that may be in smaller businesses that are not falling under OSHA, and are using spray polyurethane foams perhaps without the recommended personal protective equipment.

So that was our first set of chemical -- or product chemical combinations that we've proposed.

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DR. WILLIAMS: We have had a number of workshops to discuss whether or not our understanding of the product chemical combination is accurate, whether, for instance, which isocyanates are in these formulations and how they're used, to what extent the different -- what kind of differences there are in the product types that are on the market.

And so we've gone through a process. We're now trying to digest everything that we've learned through that process, so that we can make our final determination about exactly what we want to regulate, and we'll go to rule-making later this fall.

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DR. WILLIAMS: So the other product selection work that we're doing is to start to set ourselves up for the next three years of product selections. And we are --

the regulations call for us to publish a three-year workplan of not product -- not individual product chemical combinations, but broader product categories. And we'll be putting that out in the fall. We expect to have a draft available for public review toward the end of the summer.

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DR. WILLIAMS: So the big -- one of the big challenges for us is with that workplan is what is a product category? And I've illustrated here the global product classification taxonomy, which gives you a sense of how coarsely or finely you can distinguish a product category.

And so what we want to do, our goal for the workplan, is really to identify product categories that are broad enough to give us the flexibility to look at a range of products and product chemical combinations, but narrow enough to be meaningful, meaningful to industry, so they know what our thinking is and what our priorities are, and meaningful in terms of being able to reach out and collect the right information and make our final determinations of the next rounds of priority products. So that's what we're working on now.

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DR. WILLIAMS: So you'll see in a couple slides

that I mentioned our Green Ribbon Science Panel. One of those faces should be very familiar to you. And I believe that you had a -- received the memo that we had sent to our science panel, our Green Ribbon Science Panel last month. And in that discussion, we talked a lot about how to make these decisions about product categories. And that memo highlights a number of different ways to make the decision.

The Green Ribbon Science Panel also suggested a few other ways to look at things, both in terms of if -- rather than just, for instance, an individual chemical, perhaps we could consider the functional use approach, or look at families of chemicals and classes of chemicals. And I know this is something that Biomonitoring California has done well is think about groups of chemicals, flame retardants, you know, the organic -- the PBDEs and taking the broader family of flame retardants and looking at those. And that's something we would like to be able to do, but do it effectively.

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DR. WILLIAMS: I don't even need to show this slide, because Claudia Polsky's presentation really went into much greater depth to talk about that in her Venn Diagram of all the different regulatory efforts around consumer products. And we do intend, and we already are,

relying on federal and State efforts around consumer products, learning from the work that's already going on, trying to draft, whenever possible, and looking for those places where the regulatory authority might not be adequate in terms of providing the protection we think that consumers need.

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DR. WILLIAMS: As I mentioned, we do have a Green Ribbon Science Panel. They meet a few times a year, and they've really helped us with our thinking as we have gotten this program up and running.

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DR. WILLIAMS: So this is still early days for us. And we're learning as we go, as that -- I think the cliche is building the -- or riding on the railroad as your building -- putting the tracks down. And so we're off and running, but we are keenly aware of some of the challenges we are already facing and we anticipate facing.

So, for instance, data gaps and emerging science, how do we keep up with it? How do we stay on top of things? We're going to have to make decisions about alternatives, and we're not going to have all the toxicology in the world that everybody would like.

So how do we do -- use things like ToxCast to really inform our decisions around the alternatives?

Product ingredient verification. We do have some ability to do data call-ins, but this is a challenge. We've learned a lot even with the initial three products about what is and is not in those products. It's been eye opening.

And then I mentioned this idea that we want to signal the marketplace, let them know what's coming without setting off false alarms or causing a lot of consternation where it's not needed. And so that's a fine line to walk. And we're learning to walk that line.

A lot of people are asking us how are you going to evaluate the alternatives. And as I said, it's going to be quite a process to come up with that. And I think one of the things when it comes to alternative analysis evaluation, Debbie Rafael is one -- I think it's she that coined the phrase, "Is it necessary?", which has kind of been the mantra of the program. And then last week, she came up with the idea of, "Is it worth it"?

So we're going to get these alternatives proposed to us. And then really part of our decision is, is it worth it? But what does that look like, how do we translate that, and make sure that it's based on robust science is going to be a challenge for us.

And then lastly how do we have the impact that we want to have? You know, Dr. Petreas talked about making a

difference. Claudia echoed that. And we often say in the program, we don't have to have -- we don't have to rely on the STs, not the worst, not the most, not the least. And therefore, people are always going to question why we've made the decisions we've had. But fundamentally, we want to have good bang for the buck in terms of the decisions we make. And how to do that is a challenge for us. And we'll continue to give that a lot of thought.

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DR. WILLIAMS: Obviously, there are a lot of linkages between these two programs, and they do complement each other. I think we're -- over the -- I've learned a lot today, and it gives me a lot of ideas of how we can begin to interact.

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DR. WILLIAMS: But I'm more interested in hearing from the Panel about what they think those opportunities are, and I'm looking forward to that discussion.

Some of these things are already in the wheelhouse of Biomonitoring California staff. The teachers studies, the firefighters studies, those are sensitive subpopulations. And knowing how to focus on those and get the data needed to really assess what's impacting those communities is something that's well established.

The very process of decision making, prioritization, I think that's again something where you're further along than we are, in terms of going through that process. And I hope to learn as I watch you go through that process over the upcoming years. Although, I will say that a number of folks on staff are much more familiar with the thinking and the rationale. And it's been -- I've really enjoyed coming up to speed on it myself.

And then this idea of indicating program efficacy. The results we saw this morning were so dramatic in terms of the drop-offs in some of the chemical body burdens. Although we will be facing that dilemma of multiple sources, we will maybe address one product when we know there are exposures from a number of pathways. I think this -- there is great potential for this Program to really help us indicate -- track whether or not the decisions that were made are having a benefit, so -- and again, as I mentioned, decision making support.

So those are just a few of the opportunities.

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DR. WILLIAMS: I'm very interested in hearing your thoughts on the items I've laid out here, you know, whether or not some of these -- we can get ahead of some of the data gaps where there are things we can do. I know

the funding issue is critical. And if biomonitoring gets to the point where it's able to do kind of those ambient studies of the full population, I think that would be tremendously beneficial to our program, as we look at the overall California population and what chemicals they're getting exposed to, and are showing up in the biomonitoring, so I will continue to carry the torch for that -- for the full funding, so that the Program can do even more than it's already managing to do.

And then I'm hoping that you can provide some links for us to other biomonitoring work around the world and share that information with us.

So that's the food for thought, and I would just like to spend more time listening than talking. So thank you.

(Applause.)

CHAIRPERSON LUDERER: Okay. Thank you very much, Dr. Williams, for that great overview of the Safer Products and Workplaces Program.

And now I'd like to open up for Panel questions -- clarifying questions first and --

Go ahead, Dr. McKone.

PANEL MEMBER McKONE: There. You need to make noise to get it working.

That's very interesting. So one of the thoughts

I had as you were talking that ties into Claudia's presentation this morning, I mean one of the things that I was thinking about that we've thought about for 20 years is the way we set up regulations doesn't understand the world the way it works, right?

We like to do like air, you know, water, consumer products. And yet, I think from like a public health perspective, what health scientists care about is okay we're making something, whether it's a flame retardant or a pesticide, how much do we make and how much gets into people? And then you have to figure out all the pathways.

And unfortunately, that tends to go like air to water, water to people, or it goes water to air, air to people or -- I mean, it's very complicated. And when you were talking, I realized that at least in some of the green chemistry it's not focused on just the indoor environment or -- I mean, you've established some of these links across it. You really have to look at the quantity, how it's used, and then how it eventually gets delivered to people, regardless of, you know, you don't come in wearing a hat of water, air, consumer products.

So I don't know how -- I guess the question is how to really take this capability -- at least in the green chemistry, which is more chemical focused, it forces you to think about the whole picture. But I think a lot

of the regulatory environment hasn't caught up. And the regulations are still very much focused on air sources or water sources. So anyway, just a comment and a question.

DR. WILLIAMS: Yeah. Well, I have to say I love that comment and that's one reason I'm really enjoying the program is because I like the holistic -- you know, having that holistic approach, being able to think on that level. I was happy to hear from -- given my past experience, I was thrilled to hear someone talk about what's getting -- not being treated by the POTWs and asking the questions about what's on the 303(d) list and what relationship we have to water, because we're exposing ourselves perhaps through our skin, but then it's running straight out the drain as we take our showers when we apply those personal care products.

And so we're thinking about all of those pathways, we're also thinking across the entire lifecycle of the product. And that is very, very different than what you'll see in most other regulatory programs. It's ambitious.

CHAIRPERSON LUDERER: Dr. Cranor.

PANEL MEMBER CRANOR: Carl Cranor. I wanted -- I want to find out more how the regulatory process works, because I think that's very important. We know from the federal models that if they have to establish an adverse

effect, it could take decades before anything happens. And so I'm wondering what -- if you have a product that is of concern, is that do you have to have adverse effects? Do you have to have high levels of exposure? And then what kind of a process do you have to go through to take a regulatory action?

You have to issue a rule. How burdensome -- have you -- has anybody thought about how burdensome that can be, and how it can be gamed and things like that?

Biomonitoring could help enormously, if chemicals of concern are merely chemicals in people's bodies that one have some suspicion of, then you could do something with that if you have the authority. But if it's, you know, these chemicals are in people's bodies and they cause cancer, that's a much harder point to prove and so forth.

So can you say more about the regulatory structure and how it works and how things get fed into it?

DR. WILLIAMS: Right. So fundamentally from the product chemical combination, the priority product identification, we will have an Initial Statement of Reasons when we go to submit the regulations. And the regulations will be specific in how they call out the product, describe what that is, and what the chemical is. And for this first round of products, for instance, we

developed dossiers or product profiles containing what we consider the best available, publicly available information to document.

PANEL MEMBER CRANOR: Document what, adverse effects?

DR. WILLIAMS: Adverse effects. The exposure is hard, especially when there are multiple pathways, but we will use market data, in terms of where there are sales of a given product. We will use -- it's going to be a challenge.

PANEL MEMBER CRANOR: But just to separate those two, exposure might be easier because you might have evidence of stuff in people's bodies, but adverse effects could be much harder. Which do you have to work with?

DR. WILLIAMS: Both.

PANEL MEMBER CRANOR: Both.

DR. WILLIAMS: But the adverse effects I would -- the adverse effects, I would say, if the chemical is on our list, that's the threshold. I mean, it's actually not that high a threshold. There's a reason it's on our list.

PANEL MEMBER CRANOR: Does that come from Prop 65?

DR. WILLIAMS: No, we have 23 lists. Prop 65 is one list. Your priority chemicals is another list. The Water Board's 303(d) list. PBT lists from Europe and

Canada.

PANEL MEMBER CRANOR: Okay. So you're bringing them in by way of they're on somebody else's list.

DR. WILLIAMS: They're on somebody -- somebody else did that heavy lift for us.

PANEL MEMBER CRANOR: Okay. So if Prop 65 says it's a reproductive toxicant or carcinogen --

DR. WILLIAMS: That's the adverse impact documentation.

PANEL MEMBER CRANOR: -- that's all you need to know for adverse effects.

DR. WILLIAMS: Nominally, yeah. And then going back to the regulatory response, and this comes down to -- this is where I get to reemphasize how far away we are from the regulatory response. So we announced a few products. This fall, we'll start the rule-making process. That could take up to a year, and then begins -- only after the products are adopted in regulation will the manufacturers or the responsible entities be required to tell us they make the product with the chemical, and then begin the alternative analysis process.

That alternative, I did not bore you with the details of the alternative analysis process, but it is two -- it's a two round process. They come to us. They tell us how they're going to perform the alternative

analysis. They give us a workplan and they tell us what alternatives they think they're going to look at. And we say okay that passes the laugh test, and then they go through another more detailed round.

So now we're out another year, and then we make our regulatory response. So I will be quite honest and say we haven't fully laid down the track for that, and that we are going to look at the models from other programs, CARB, other entities, in terms of deciding how best to exercise our response.

PANEL MEMBER CRANOR: Okay. Thank you. I hate to, you know, spend time on the law, but it may make your task -- your law may make your task easier or harder. You don't have to show that, say, TDCPP actually causes cancer in this cohort of people.

DR. WILLIAMS: No.

PANEL MEMBER CRANOR: If it's on Prop 65, then that's good enough.

DR. WILLIAMS: Absolutely. Yes.

PANEL MEMBER CRANOR: And then you can proceed. That helps.

DR. WILLIAMS: Yes.

CHAIRPERSON LUDERER: Dr. Quint, did you have a --

PANEL MEMBER QUINT: This is Julia Quint. I'm

doing more shaking of my head in terms of -- I think you raised a really important question about whether or not you actually have to show harm in people, because --

DR. WILLIAMS: Or animals.

PANEL MEMBER QUINT: Yeah, but the list actually, you know -- or what -- it's already hazardous. It's assumed to be hazardous or, you know, subject to the regulation, if it's on one of many lists, as Meredith said, and -- because if we are -- it's the potential for harm is what is said over and over again in the regulation, and potential exposure.

So you don't have to have, for instance, air monitoring data. Of course, if you have data that helps your case, probably in the regulation, when you start to regulate, but this is a hazard based phenomenon. This is not -- you don't have to show, you know, the risk of cancer, and -- you know, it's at -- people are at high risk. So it's -- and it's very important to keep that in mind. Neither do you have -- I mean, and the alternatives assessment is all about finding something that is less hazardous than the chemical that's on the list.

The one thing I think that is important, and where it relates as we get into discussion, is the regrettable substitutes that could be identified as, you know -- in lieu of the chemical on the list. And that's

where, I think, a lot of the discussion about how these programs can interact, CARB and the Safer Consumer Products regulation, Safe Cosmetics Act, I think, all of those working together can help to avoid some of these regrettable substitutions.

Anyway. So it's more -- not a question, but reemphasizing Meredith's comment.

CHAIRPERSON LUDERER: Dr. Bradman.

PANEL MEMBER BRADMAN: Okay. I just have a few thoughts, and I don't know if I -- am I supposed to limit my comments now to just this presentation or --

CHAIRPERSON LUDERER: No, we can --

PANEL MEMBER BRADMAN: Okay. I just think that the -- I mean, the discussion we've had today, this afternoon I think has been really enlightening for everyone, certainly myself, and I suspect the Panel and the audience as well.

And I'm trying to think about, you know, what is the big picture message here, and specifically, how does that impact the -- you know, the Biomonitoring Program, and how does it also affect our own discussions and maybe even specific recommendations we might want to make to address some of these things?

I think all of us have been aware and concerned about exposures related to consumer products. Certainly,

that's been a focus of some of our own research, and it's also a -- many of the different chemical methods we have right now, you know, if not most, focus on measurements of things related to consumer products, certainly the flame retardants we've heard a lot about, phenols, bisphenol A, phthalates, things like that. And so there's really already a priori built into the Biomonitoring Program a clearer interest in consumer products.

When we started designating chemicals back in the day, we started with the EPA list, and we developed some priority chemicals. And then we tried to emphasize potential exposures that were unique to California that might warrant special attention, and among those was one reason why we very quickly prioritized the flame retardants.

But I'm wondering here if maybe we need to -- given the importance of consumer products, maybe we need to kind of step back and evaluate our list of analytical methods, and then our list of chemicals that are on the designated list, and think about whether there's already resources to address questions about exposures to consumer products, and then are there any new classes of exposures that we should be considering? I mean, we've had some excellent presentations today.

And if this is going to serve, for example, the

Biomonitoring Program, it seems clear that your agency is interested in getting resources from this project, which I think everyone involved in the project would like to provide, both to your agency and the general public and industry, how do we go about, you know, perhaps identifying -- using the capabilities we have now to address some of these questions, and then where do we need new efforts, and are there some obvious classes of consumer products that we need to perhaps extend some chemical methods to, to provide information on?

And is there somewhere in that -- in that range of issues, are there specific recommendations that the Panel might want to make around this issue? And I'm not sure what they are at this point.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: Julia Quint. I'm hitting this wrong. Okay. Julia Quint.

This isn't a specific recommendation, but I think we've identified with two presentations today the importance, and we've discussed it, of respiratory sensitization, and it's not something that pops out of our biomonitoring priorities. And I think it -- who knows if we can biomonitor for, you know, the chemicals that cause respiratory sensitization, but I would like to, you know, raise that as an issue.

I mean, I actually have discovered two abstracts where you're biomonitoring -- that are methods to biomonitor for isocyanates. I don't know if they are ones where -- and I don't know if they're sound methods, but they are out there, so we should take a look. And I don't know whether or not we could extend what we're doing to cover new methods like that. I mean, that's one of the questions I have.

But I think, you know, when you have -- it's an underserved issue toxicologically, because we don't have animal tests, we don't have lists, the lists are very different that, you know, different countries come up with, because they are criteria based. So there are lots of issues there. So I think, you know, that kind of a discussion, based on what we've heard today, should certainly take place. Whether it comes out as a recommendation, it's definitely food for thought.

It's also a big issue in -- you know, the Environmental Health Tracking Program has done a lot with tracking asthma, so asthma is of concern. The chemicals that the isocyanates the diisocyanates that you've raised with a -- in the priority products are a big target for -- they're in a lot of products and could contribute to that.

So I think that as a health issue or health endpoint is something that we haven't -- you know, we

focused on cancer, reproductive toxicity, developmental toxicity. And I think this Program raises that.

I think the other thing that the Safer Consumer Products Program has elevated is a need to look -- I mean, you've -- workers are considered a sensitive subpopulation, and I think that's very appropriate. It was something that I really touted in the beginning, because, you know, in terms of the regulations, the chemicals are not regulated to prevent the endpoints that are of concern, cancer, reproductive, toxicity. Dr. Quach mentioned a number of issues, low amounts of a number of chemicals with the same endpoints, you know, not falling beneath the regulation.

So I think this Program, you know, is bringing all of these things together. And so it's -- you know, I think discussions about where we go in terms of types of studies we do could certainly show some nexus between the two programs.

CHAIRPERSON LUDERER: I thank you very much, Dr. Quint. I see that we, I think, have some public questions or comments. Amy, do we have --

MS. DUNN: Just for after when the Panel is assembled.

CHAIRPERSON LUDERER: All right. This might be a good time to take the public comments at this point, or --

and then also, I thought it might be helpful to actually show some of the questions that I had kind of raised in the introduction for the Panel maybe to think about as we begin the discussion.

(Thereupon a discussion occurred off the record.)

CHAIRPERSON LUDERER: Can we -- or should I -- I can just read them?

MS. HOOVER: Yeah, why don't you -- sorry, that was very loud. This is Sara Hoover again. We had a little technical difficulty getting those slides, but why don't you start with -- I mean, I think that from what was just being said, to me, maybe the last question actually where we were talking about, you know, what are the ways that -- what are the intersections between the programs, and maybe we could hear something about the Safe Cosmetics Act too, is there any interaction there? So maybe talk a little bit -- because that was the direction you guys were already going about the intersections between the programs.

CHAIRPERSON LUDERER: Yeah, so I think actually kind of the last two. So one of them is does the Panel have suggestions for how best the Program can collaborate with researchers and other State programs to help identify and assess chemical exposures for consumer products? And then also how could biomonitoring be applied as a tool to

contribute to greater chemical safety in cosmetics and other consumer product?

And I think that both Dr. Quint and Dr. Bradman were really raising those issues.

Dr. Quint, did you have --

PANEL MEMBER QUINT: Yeah. This is Julia Quint.

I think -- we didn't talk a lot about -- Claudia brought it up. We didn't talk a lot about CARB in this last few minutes. But I think the Air Resources Board has done a lot with consumer products, as Claudia mentioned, including, you know, aside from VOCs, they've actually restricted or banned the use of some of the chlorinated hydrocarbon solvents, TCE, methylene chloride, and Perc in a number of consumer products, which has not been done any place else.

And I think they are about maybe -- I think they conduct surveys or have in the past, and I think are continuing to do that. And I think there's somebody from CARB here which we could learn about -- a lot about the surveys that they do, because they identify consumer products, and there are a list of consumer products in various categories, which I think would be extremely helpful for all of us, because that's the missing piece for a lot of this is where are the chemicals.

We have the exposure with biomonitoring, but we

don't know some of the ways that the exposure is happening. And for everybody else, they have the chemical, but they don't know where the chemical is located. So I think collaboration with CARB and learning from what they do. I know the Green Ribbon Science Panel certainly learned a lot when we were deliberating about the regulation. So anyway, without further ado.

CHAIRPERSON LUDERER: Go ahead and please introduce yourself.

MR. EDWARDS: Thanks. My name is Dave Edwards, and I work at ARB. And I'm the manager of the Consumer Products Implementation Section, and I'm also coordinating the current survey activities that we're working on.

So, first off, just thanks for having this meeting. This has been very interesting. It's my first time to it. The speakers and the discussion have been very interesting overall.

So based on a couple of the presentations that we've been hearing this afternoon, I wanted to give a better overview for your information about what our 2013 survey is and what kind of data we collect. We've done surveys the past 20 years on various types of consumer products starting in the mid-nineties and going up through some minor ones up in 2010.

The one that we're planning for 2013 is going to

be much more comprehensive. We regulate about 130 categories of consumer products, and this survey is covering 430. And so it's very comprehensive. It goes everywhere from deodorants, hair sprays, lubricants, degreasers, aerosol coatings, adhesives. And the idea is that we want to be able to use this information to inform the upcoming 2016 State implementation plan, which we're looking at probably further VOC reductions across the State, particularly in the South Coast.

So some of the highlights of the survey, just to kind of -- as opposed to the past, which is sort of a year snapshot, we're looking at doing a three-year survey of 2013, '14, and '15 data to establish trends across all the consumer product categories, those 430 that I mentioned. And this, I think, will be beneficial for, one, our inventory, and also informing the -- our future regulatory actions to look at up and coming types of consumer products.

And just to kind of piggyback on a couple of the talks we had, we are -- we have added the product category gel nail polish to our list. That's on our draft list. And another item of interest is pet care products. Those have shown about a 31 percent increase in the last couple of years of use within California and the United States.

And as far as the data we collect on these

categories, we collect sales data. This year at -- well, at this point, we're looking to do it at the S-K-U, or SKU, level. Those little -- the black bars and the numbers at the bottom. So we'll be able to -- hopefully be able to get some pretty detailed information on different sizes of products and the amounts of those different products that are being sold in California.

On top of that, we also collect ingredient information, so all speciated VOCs, exempt and non-exempt, low vapor pressure volatile organic compounds, as well as sort of generic idea -- concepts of color, fragrance, surfactants, and resins. So we're going to be able to get a pretty detailed overview of what's in most of these products as well.

As far as availability goes, we do have sort of aggregate data by category posted on our website from past surveys, and we envision that we would be doing the same thing moving forward.

So I'd be happy to answer any other questions you might have, but that's sort of a general overview of what the survey will be.

CHAIRPERSON LUDERER: Dr. Quint. Thank you very much.

PANEL MEMBER QUINT: Thank you. Julia Quint. Can you share the information with other State programs,

or is that -- I know, you aggregate data for the website, because part of it -- some of it is confidential. But what is the policy with regard to sharing with other State programs?

MR. EDWARDS: I know from a -- just my past position, I was in greenhouse gases. There are memorandums of understanding that we do have between different agencies. That is one possible route to sharing data. And then as far as the other types of sharing, I do know, as long as it's aggregated to some level, and it sort of -- the confidentiality aspect moves -- gets out of the question, then we can share the data a little bit more.

For example, in some of the product categories that have hundreds of products in those categories, we're able to aggregate, I think, ingredients and sales in those categories. Whereas, some of the smaller categories we'd combine together.

PANEL MEMBER QUINT: And the second question I had is I know you've restricted the use or banned three -- you know, the three chemicals that I mentioned, the chlorinated hydrocarbon solvents, in certain -- a lot of categories actually.

So how is that decision made? I mean, because that's not based on VOC necessarily, because methylene

chloride and Perc are not -- are VOC exempt. So how do you -- how do you decide which, you know, on the toxicity issue, because those were done based on toxicity, as opposed to VOC? I'm just wondering about that, because that's another possible way to interact with your program, I guess.

MR. EDWARDS: Okay. Well, I do know that we have a couple contracts with -- or at least one contract for sure with OEHHA to evaluate -- whenever we do like a VOC exemption or we do plan to talk about the toxicity, we have them do exposure assessments and toxicity evaluations for those compounds to ensure that everything is okay and exempting that compound or banning that compound.

I'm not 100 percent sure on how the TCE exemptions came to be. That's a little bit before my time.

PANEL MEMBER QUINT: Okay. Right. Exactly. The reason I bring it up is because in certain -- you know, when you -- for instance, when you restrict the use or ban methylene chloride in a certain product, then you can have the regrettable substitute of n-methylpyrrolidone, you know, replace it. So I was just wondering how you dealt with those sorts of toxicity issues?

But, you know, I mean, it did happen a long time ago with the chlorinated hydrocarbon solvents. I don't

know how it happened, but it would be great to see -- you know, if there is a process that we could avoid some of these chemicals that are exempt for VOCs, but then raise toxicity issues, because often those things are separated.

In this case, CARB did a great job of closing the door on some of the -- you know, on the methylene chloride and Percs that could be in other products, because now you can't use them in certain categories. So I guess that would be -- to find out more about that would be interesting for this Panel.

MR. EDWARDS: Yeah, I can look back into our regulatory record and do a follow-up with maybe Sara and she can disseminate.

PANEL MEMBER QUINT: Yeah, that would be interesting. Yeah, that history would be interesting. Thank you.

CHAIRPERSON LUDERER: Dr. Alexeeff.

DIRECTOR ALEXEEFF: Hi. In the list of chemical ingredients that you mentioned, you mentioned like VOCs and things like that, you didn't mention toxic air contaminants. Is that also something that you would ask them for, what toxic air contaminants are in their products?

MR. EDWARDS: Yes. It's included in the -- so we regulatorily define what a volatile organic compound is,

and what a low vapor pressure volatile organic compound is. And so the way that we're going out right now is that we're requiring speciation for both of those categories, minus generic color, fragrance, surfactants, and resins.

So every other organic compound that is in the product will be speciated. So if it doesn't fall into a VOC category, it would likely fall into that LVP category, which is above a certain vapor pressure and boiling point.

From a sort of -- from the industry perspective, they would rather we have another cutoff at another arbitrary higher number, so they would not have to speciate all of the organic compounds. But the idea is that we do want to get that speciation information, which we -- and that is something new that we've never attempted to get in the past.

DIRECTOR ALEXEEFF: Thank you.

CHAIRPERSON LUDERER: Do we have any other questions, comments from Panel members?

We can take some of the public comments at this point, if not, or if we have any responses from any of our speakers, if they wanted to say something.

Of course.

DR. DiBARTOLOMEIS: Michael DiBartolomeis. I heard somebody on the Panel wonder about the link between Cosmetics Act disclosure list or whatever and maybe

Biomonitoring. It wasn't quite asked that way, but I know something a little bit about the cosmetic ingredients.

So when I first took over the spot of -- for the Program lead for this Biomonitoring Program, I asked that question myself, how many chemicals are frequently reported as being in content of cosmetic products are on our priority chemical list for biomonitoring?

I didn't really -- I guess I was also interested specifically on what we had methods for. And the overlap is very small, quite honestly. Phthalates are one overlap, metals, some of the metals.

The number one reported chemical, of course, we've talked about over -- I think you probably know what it is, is titanium dioxide. It's in just about everything. I don't even know if it can be biomonitored for, but it's obviously not -- I don't even know if it's on our designated list, but in any case. So that would be clearly one that if we wanted to look at any cosmetic product specifically for a chemical that you know is going to be in them, that would be one.

The class of chemicals that I think is the most glaring omission are VOCs. And I think that's also going to be true for all consumer products as we kind of go forward. VOCs maybe has a very specific definition, but anything that's volatile that you can either look at a

parent compound or metabolites in specimens would be something I think important to look at. There are quite a few issues with doing that.

And then, you know, something like formaldehyde, I don't think there -- you can't just go in and do a blood study or urine. You need to probably do some kind of protein binding thing or whatever. But again, you know, formaldehyde we've talked about it's a crucially horrible chemical. So, you know -- so when we're talking about these things, I would love to hear a little bit more about what we would do -- you know, what should we do about those chemicals that we don't have a method for or it's not on our list, but it would be key for informing whether it's cosmetics or other consumer products or even some of the environmental interactions for biomonitoring.

So that's all I wanted to say, but I have done that exercise, and there isn't a great overlap unfortunately. We'd have to do some work.

CHAIRPERSON LUDERER: Dr. Bradman.

PANEL MEMBER BRADMAN: Yeah. I think that was, you know, the point I was trying to get at in my earlier comments, in that maybe we need to systematically review our current lists, our current analytical capability, and then our -- you know, the things that are being worked on as potential, you know, things right now, and then see how

that matches up with some list of priority consumer product chemicals.

And I'm not sure how to systematically generate that list. I mean, you brought up some good points, and -- but maybe there's a way where we can look at existing lists, and perhaps from that do some screens to try to nail down, you know, what set we might want to prioritize for method development. And that's where I take it back to, you know, how can the Panel make concrete suggestions on say specific classes to prioritize?

And maybe that is a -- could be a recommendation right there is to ask, you know, the Biomonitoring staff to perhaps begin to take that universe of chemicals and systemize it, so we can start reviewing it.

I just echo your comments about VOCs. I think that's an excellent point. Certainly my experience in monitoring for cleaning products and formaldehyde and other VOCs in child care, there's a whole, you know, range of exposures going on out there that I think are important.

DR. WILLIAMS: This is Meredith Williams. And one thing -- I think one opportunity to start that process would be to look at the workplans. So the way the workplan is likely to evolve is that we will publish these product categories. When we do that, we actually do have

to say something about chemicals or classes of chemicals or functional use categories, adhesives, surfactants, those kinds of things that are causing our concern and that led us to include the product category. And that can be -- and then we'll likely go out and conduct workshops around those, try and dig into those a little bit more. And somewhere in that process, I think there will be a natural place where we can have that conversation around at least those groups of chemicals that are associated with the workplan. So that may be one opportunity.

Can I, while I'm standing up here, throw out my other?

CHAIRPERSON LUDERER: (Nods head.)

DR. WILLIAMS: So I had a bullet on one of my slides about complementary studies, and I know that Heather Stapleton I believe came to talk to you last year about dust studies. And that's not something that you can undertake, but it may be something that DTSC could look into or consider. And so the idea that those dust studies could inform our decisions and inform your priorities is something that I think we would be very interested in exploring, especially given the non-targeted testing that's about to come online.

CHAIRPERSON LUDERER: I know Dr. Cranor had a question. I was thinking it might useful also if we could

put that list up again that we went through at the beginning and -- because I think that highlighted some other chemicals that we have already designated and/or prioritized that are in -- actually in cosmetics.

Dr. Cranor, while we're getting that up.

PANEL MEMBER CRANOR: I wanted to follow up Asa's comment. It seems to me that this is a place where the staffs of the various agencies could get together and have some conversations. The limits of the lab, I take it, are going to be difficult to overcome at least initially. So there would be a question of what kinds of things that can be detected, and those -- that creates a possible list, but then also conversations with agencies that biomonitoring can assist would feed into information that the Committee could designate as priority chemicals, we can choose to do that if the labs can detect it.

So finding the net overlap between what the labs can do and what our priority concerns for the other agencies at the staff level could inform the Science Advisory Committee, and then we could just designate some things because they're going to be helpful to California in terms of addressing hazardous exposures, if we haven't already identified those, it would seem to me.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: This is Julia Quint.

You know, along those lines, solvents or the volatiles are a big class of chemicals that have been regulated over time. You know, we mentioned three of them, TCE, Perc, and methylene chloride, and n-methylpyrrolidone. I mean solvents are a huge class. Aside from the laboratory challenges of whether or not we have methodologies, is the collection of the samples are a problem as well, because, you know, a lot of them are best measured in exhaled air, which is, you know, not blood or urine.

And the occupational health, I mean, that's one -- biological exposure indices have been done or by -- in the occupational health arena for a long time. And solvents have been a huge part of that. So they have methodologies for doing it, but the timing of the exposures is really important.

If you notice in NHANES, methylene chloride is one of the measured chemicals, but, you know, the levels are extremely low. And it probably has to do with the fact that -- of the way the sample was collected. So it's a huge challenge for biomonitoring, I think, in terms of solvents. You'd have to look at each one, but it's -- you know, and it relates to the toxicokinetics and when these things go into the body and then when they come out. And you have to be there to capture it, otherwise it will look

like a non-detect.

So it is a problem. It's not something that, you know, we can't possibly overcome. But it's unfortunate, because, you know, we know that there is exposure to a lot of these chemicals just from their very nature, but proving that, in terms of biological monitoring, may be a -- you know, more of a challenge than some of the other chemicals.

But I mentioned this morning, I mean, isocyanates is, you know, another -- if you're talking about asthma, there are, as I said, two published -- I saw two abstracts where there is a method. We could look at that and see. And so there may be other chemicals.

And in terms of the cosmetics, I think even in nail polishes, from the MSDS's that I've looked at, there are numerous chemicals that are on our biomonitoring list in nail polishes, bisphenol A is one, TXIB, some of the newer chemicals that are substituting out for the phthalates. I mean, chemicals that I don't -- the function of those chemicals in the product is unknown, which is another way the safer consumer products would come in, because the first question is what is the function of the chemical? So I'm not sure what the function is. I know they're not in all nail polishes. Benzophenone-3 is -- I mean, how much is in there varies.

But all of these chemicals are in nail polishes. And so they're not on the Prop 65 list, but they are in, you know, a number of cosmetics and they do correlate well with what's on our list.

So we could -- you know, that's another possible target.

CHAIRPERSON LUDERER: Dr. Quintana and then Dr. McKone.

PANEL MEMBER QUINTANA: Hi. Jenny Quintana.

I had a question, I guess, to those in the audience and to the Panel, which is I believe one of your questions to us was how can biological monitoring help in regulation of consumer products?

And it seemed to me that these intervention studies like we've seen today, the Hermosa Study that you mentioned, Dr. Bradman, where you show that by behavioral change, by avoiding these products, you measurably reduce body burden, I think, gives ammunition or help to people trying to regulate these products. Because I think people might say why are you picking on our industry, because many other places have the same chemicals, but if you can have these very targeted studies that show, yes, they are coming from these products, yes, you can make a difference, it seems to me that's a fairly powerful message. But I was interested in people's comments on

that.

CHAIRPERSON LUDERER: Dr. McKone

PANEL MEMBER McKONE: Well, my comment -- wow, sorry. My comment is not on that, but it was back to the issue of the persistence of the biomarker or the existence of a marker. And, you know, I think we should think about the importance of, I guess, it's the unknown unknowns or something. You know what we worry about is something that could be very harmful and there's no marker. You just don't know if it happened. There's no way of knowing.

And I'll give you an example of this. It's like if you get exposed to x-rays, right, or gamma rays, historically, I mean, you wouldn't know that, right? You could walk in front of an x-ray machine, you walk away, and there isn't something in your blood that would say -- well, there is now, but it used to be there was no chemical signal, but you could get extreme amount of damage without a really easy way to monitor it.

Another -- at the other end of the spectrum might be like dioxins or PCBs which might persist in the blood lipids for 20 years, right? So if you get exposed, you can see it.

Now, in the case of radiation, what people learned to do is not look for the -- you know, you can't find x-rays. You know, they don't attach to anything.

They just go through you, do all the damage, but they're gone. But x-rays leave heritable genetic damage, right, and then we learned to look for that.

And this is something Larry Needham brought up, right, way, way back when we were talking about the need for finding markers for things that could be quite harmful but don't stay long in the body, like very volatile compounds, that you're going to breathe them out within minutes after you're exposed. So unless you get somebody's breath instantly, you don't know what happened, right? This is like you get a lot of damage, no evidence.

And so I think we have to continuously sort of look for -- you know, define this spectrum of things that are important to us. I think we know a lot of those. Unfortunately, you know, we tend to go under the lamp post. We know the chemicals that persist and are harmful and we keep looking for those, but we really have to drill into methods for finding the chemicals that are potentially quite harmful, but don't leave a trace, or don't leave a good trail, or leave a very confusing trail, because they don't last in the body long enough to be seen.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: I wanted to comment on the last question -- the previous question about how do we,

you know, show this great -- the changes. You know, worker groups -- occupational health studies are one way to do that, because you know, and I think Dr. Quach mentioned, with the phthalates, you know, showing -- doing a measurement before, and then after the person has worked with it, to rule out the non-occupational exposures because you know what the person -- presumably, you know what the person is exposed to at work.

And I think that that is one population that you could possibly more define what the exposures are. And if you saw differences, you could pinpoint it to the exposure to the chemical, as opposed to -- you know, you do have to factor in the non -- the phthalates you put in the cosmetics from the phthalates that are being -- you're exposed to at work, but there is a way to do it. And that's the way the biological exposure indices have been done over time, because, you know, they've -- occupational health has always done biological monitoring. They just haven't tied it to chronic conditions, but -- and that's because exposures happen both by inhalation and skin exposure. So you've used biological monitoring to look at the total exposure, and they've always had to factor out the non-occupational exposures from the occupational ones.

But you definitely can tie it more directly to the product or to the chemical that the person is being

exposed to. So that's a group that we could make that correlation with.

DR. QUACH: So I just wanted to comment. I'm not sure what my point is in saying this, but I'll just kind of think out loud. For those that know me, know that in working with nail salons, I've been hot and cold on this biomonitoring thing.

You know, as someone who started in the biomonitoring world and helping to plan some of these efforts, you know, I was really struck by the science, but, you know, knowing about the limitations with the lab. However, when it came to the nail salon workers, there was a lot of concerns. I think Julia really pinpointed about the collection -- complexities of collection.

We actually work with Myrto's lab in trying to collect some of the urine samples. You know, this is one of the first kind of like a feasibility effort just to see if the workers were even going to give us urine samples. And we were really pleased that I think 90 percent of them in the small pilot study that I did actually gave us the urine samples. But, you know, my staff were like it was really hard to collect, and we only collected it at the end of the workshift. So I don't know how it's going to be when you're going to collect it before the workshift and you're trying to get in in between customers.

So those concerns make me wonder does that really set you up for really detecting something that's not going to be very -- something that's going to be worthwhile in terms of communicating to them, because you've already set it up so they can.

And then issues around how you communicate it back. One of my biggest concerns has been that we do the biomonitoring and we find that the levels which we keep saying are really high of phthalates in workers aren't really that high. And I think some of our preliminary results really show a range in that. And so what do we communicate back?

You know, your levels of phthalates aren't that high, so, you know, don't worry about anything, when we know that there are regrettable substitutes. So I'm constantly struggling with these issues when thinking about biomonitoring and what I'm going to communicate back to the workers who are really looking to me for some of the answers and really trying to encourage them for these exchanges.

You know, if the results aren't what we think it's going to be, how do we communicate that, because we know that these things aren't -- are harmful to them? And then if the data doesn't show because of the limitations in how we collect, or the laboratory detection limits and

such, what are we going to say to them, like, don't worry about it?

And we're struggling with that, even with the personal air monitoring. So I just wanted to maybe say some of those as -- as some of the concerns where -- I've been hot and cold. There are days when I'm like I'm putting in a grant and I did put in a grant on phthalates and biomonitoring. And then when they asked me to resubmit, I'm like I don't know. I'm getting a little nervous in terms of my accountability to the worker population that I serve.

CHAIRPERSON LUDERER: Thank you very much.

We have another comment.

DEPUTY ATTORNEY GENERAL POLSKY: Yeah. I just wanted to describe a biomonitoring study that I would love at some point to see. And this picks up on a few threads that have been mentioned.

One is this issue that Dr. McKone raised of trying to find markers for transient exposures that may be important, but don't leave a very clear trace or not one we know how to find. And something Dr. Quintana said about focused biomonitoring studies, including of worker populations. And then what Dr. DiBartolomeis was saying about the interaction between the Safe Cosmetics Program in particular and the universe of cosmetics products with

biomonitoring.

One of the big regulatory gaps, of which I'm sure many people are aware, is around the area of fragrances. It's an area of great consumer ignorance, because they're not required to be disclosed on product labels under the federal Food, Drug and Cosmetic Act. I don't think there's been, you know, uniform reporting to DPH on fragrance ingredients probably in California.

And we were part of a very interesting, not concluded, investigation with multiple California agencies trying to get a handle on a very specific and somewhat surprising fragrance problem. And this was not the use of fragrance in say cleaning products, which is an issue, or the use of perfumes, which is an issue. You know, possibly almost life-long exposure to something on your biggest organ, your know almost nothing about what's in it.

This was an interesting, and I hate to say possibly emerging issue if you read marketing publications, which is the emergence of scent branding as a marketing frontier. And that is a store that is not primarily a purveyor of perfumes deciding that because olfactory memory is so very strong, it's in our reptilian brain, when you walk by their store, they want you to be able to know that you're walking by their store and walk

right in. And when you go inside, the air is super saturated with a distinctive corporate fragrance.

And we encountered a situation where a particular chain had made scent marketing a very, very strong frontier. And there were lots of workers who had an array of extremely unpleasant, mostly transient symptoms. If they went home at 5:00 o'clock feeling crummy, sore throat, nauseated, dizzy, headachy, a little bit cognitively foggy, maybe by 9:00 o'clock at night, they'd feel eh. If they went home on Friday feeling that way, by Monday they'd feel really good, but then they'd feel terrible by the end of their shift.

And these workers were required not only to work in this high scented environment, but to manual reapply scent to merchandise at regular intervals. This is part of their job description, okay? This company is an employer of thousands and thousands of low wage workers in America.

This is fascinating to me on many levels. It was fascinating in part because no agency had a regulatory hook on this. We don't know what's in the product. The workers are scared to do anything voluntarily. And then they're really -- this is a very unregulated space.

And so I know Dr. Bradman was talking about are all the chemicals on your list that should be. I don't

know. I think this is also sort of a role for non-targeted screening, because probably there are lots of things used in fragrances that we're not even aware of.

But I do think that multi-agency discussion around the issue of fragrance use, perhaps starting with something like an occupational population, might be an interesting kind of study.

Thanks.

CHAIRPERSON LUDERER: Yeah. Thank you. And actually, I was going to -- we were talking about trying to get the list up and I don't think we were able to. But one of the classes that is -- of chemicals that's designated -- that the SGP designated was the synthetic polycyclic musks and related class of fragrance chemicals.

So I think that's the only group of fragrance -- or two groups of fragrance chemicals that are currently on the designated list. But that is something that the Scientific Guidance Panel has definitely, you know, thought about, and it would be, you know, interesting to see if there are other classes of fragrance chemicals that could perhaps be brought to the Guidance Panel that we could also consider.

And also, that group is not one that we have recommended as a priority. And that might be something, you know, that we might want to consider discussing that

again at an upcoming meeting.

And I also wanted to just, since we don't have that list in front of us, to mention some other classes that are currently on the list that are also in personal care products and cosmetics, the cyclosiloxanes, where a group that -- it was one of the earlier groups of chemicals that we were concerned about. They're in personal care products, household products, dry-cleaning. They're being used as green dry-cleaning agents.

And also, the -- a lot of the antimicrobials that are in personal care products, parabens, triclosan, triclocarban, those are also already on the list. And so those might be things that we, as a Panel, might want to discuss and consider kind of in view of all the -- what we've been talking about today. So just throw that out.

Dr. DiBartolomeis.

DR. DiBARTOLOMEIS: Just so you have a little bit more information if you're going to have a discussion about some of those things you mentioned. Remember, the Cosmetics Act requires that they are either known or suspected carcinogens or reproductive toxicants.

Endocrine disruption is not a basis for listing as a reproductive or developmental toxicant. So one of the glaring omissions on the other side of the fence is they're not reporting parabens or some of these other

endocrine disrupting chemicals.

So that's another gap. To anybody who is out there listening about maybe doing some legislation in the future to add -- you know, to bone up on the Cosmetics Act, that would be something you would want to do, but that -- so that's another kind of gap that we have to deal with.

CHAIRPERSON LUDERER: We have a stack of public comments, so I think that we should go ahead and do that now, and then we can have some more discussion afterwards.

So we have Mr. Ernest Pacheco from CWA.

MR. PACHECO: Hello. This is mostly more of a comment and a little bit of a question. When I found out last week from Nancy at Breast Cancer Fund that you guys had lost or didn't get your budget from the State, I was really disappointed.

Dollar for dollar, what comes out of the Biomonitoring Program, has got to be one of the best deals that the State could get. It's really useful information for all the reasons that have been talked about today.

I came here to kind of just listen and learn. And CWA represents a lot of different kind of workers. We represent a lot of telecom workers, industrial workers, furniture manufacturer, air flight attendants, whatnot. And we're very interested in trying to get a biomonitoring

program for our air flight attendants for a really nasty neurotoxin TCP, tricresyl phosphate, which our people have been battling with their employers for years about.

Also, while -- and we really appreciate the DTSC SCP process that's going on with the priority products. Our workers are working with toxic fire retardants that are not chosen. The one that is chosen is entirely valid. And we would love to have a monitoring program for our people about what toxic fire retardants they're being exposed to in the manufacturing plants for mattresses and whatnot.

I don't know what we can do with your guy's now limited budget, but I'm interested in figuring out what, if anything, we can moving forward.

Thank you.

CHAIRPERSON LUDERER: Thank you very much.

Nancy Buermeyer from the Breast Cancer Fund.

MS. BUERMEYER: Thanks very much. Nancy Buermeyer of the Breast Cancer Fund.

This has been an incredible afternoon of learning and getting excited and getting mad and wanting to do more and wondering where any of us are going to have the time to do more, but thank you to the Panel, and thank you to the team that put the Panel together and brought us all here.

The Breast Cancer Fund has been incredibly involved in all of these programs. We helped create the Biomonitoring Program. We were a part of the team that created the Cosmetics Program. We were very involved in the Safer Consumer Products Program. So we have a big interest in all of this work. We also have a very big interest and have talked, probably more at the federal level than the State level at this point, about how do you integrate the very complex system of chemical regulation?

I've done a lot of that on the federal level. I've never seen it presented quite as well as Claudia did today on the State level, but are very interested in helping to facilitate, any way we can, bringing those programs together and helping to augment each other and have that kind of synergetic effect.

One resource -- and to finish that thought. I really want us, as an organization, with the numerous other advocacy groups that we work with, to help you and all of the agencies tell the story beyond the State government, to really be able to communicate what these programs mean, how they can work together, to a number of audiences: The environmental health audience for sure, and the policymakers, it be the State legislature in an effort to replace that funding, and at the national level, because, you know, a chunk of the money that goes to a

number of these programs, certainly the Biomonitoring Program, has come from the CDC. And it's not necessarily easy to get the CDC enough money to be able to give it to the State.

So we want to help sort of pull all those pieces together and tell a cohesive -- an integrated story around why these things are so important.

A couple of more specific comments I just wanted to make quickly. In thinking about how we collect use data and how we understand how chemicals are used in different consumer products, I would encourage us not only to use the vast resources of the State -- and I just learned about the ARC, ACR?

CHAIRPERSON LUDERER: ARB.

MS. BUERMEYER: ARB. And I'm going to track him down, because that stuff is awesome.

(Laughter.)

MS. BUERMEYER: But we can look beyond the borders of California. The State of Washington has a program that requires manufacturers to report to the State ingredients in kids products, so they can printout an entire list of phthalates used in kids products. And that's the kind of information that might be -- bring in and sort of augment what we're doing here. And there are other states that are doing programs that may be helpful

in this process.

In terms of the fragrance chemicals and chemicals generally, I think when we spoke about this at a previous meeting, we talked about some specific phthalates, but phthalates as a class per se had not been designated, which gives the Program a little less flexibility in terms of being able to shift as the market shifts, and we've certainly seen market shifts. And it would be great to be able to look at different kinds of phthalates as we can develop those methodologies.

And then last, I want to actually comment on something that we talked about awhile ago, which is results return. And as Dr. Bradman said, there's been a lot of pushback about giving results back to communities. And we've had this conversation with the CDC, and a number of other folks. And the two issues are resources, which is a very real one, and then this concept that communities can't handle the information, because we can't give them a definitive answer about what it means.

So I hope that the experience that the California Biomonitoring Program has had can be integrated into some kind of a publication to try to set aside at least that latter concern about the fact that communities can't handle it. I think it's a very paternalistic approach to working with communities on these issues, and it's an

issue we fought hard for to require the reporting in the California Program.

So I hope that the Program will look at how do we take that experience in what we've learned and put that into the scientific literature, so that we can have stuff in hand to go to other programs with.

So thank you all, as always, for the great work that you do. And I look forward to continuing to learn more and working with folks on the Panel, and, you know, moving this stuff forward and trying to get you guys the resources and credit that you deserve for the great work that you do.

Thank you.

CHAIRPERSON LUDERER: Thank you very much. Our next comment is from Veena Singla, NRDC.

DR. SINGLA: Thank you. Veena Singla with the Natural Resources Defense Council. I wanted to echo that this has been a very interesting and informative discussion, and it's been great to learn about the different programs and the many different possible collaborations and synergies that could be possible.

One area that I think was not covered this afternoon was possible program collaborations in the area of pesticides, and how the Biomonitoring Program could support more information about pesticide exposures and

inform policy regulation there. So I wanted to note that's an area to think more about and possibly discuss at a later meeting.

And I think Dr. Quach's last comments in terms of what -- you know, what do these results mean for workers and what can we really say when there's regrettable substitutions, even though their exposure is to certain classes maybe lower, points to the fact that, you know, fundamentally consumers can't clean or shop their way out of this problem, and workers can't either.

So, you know, what we really need is a fundamental paradigm shift in terms of using inherently hazardous chemicals and products. And that hopefully with the Safer Consumer Products regulations and some of these program collaborations that that's what we're going to be moving more towards.

Thanks.

CHAIRPERSON LUDERER: Actually, could I ask you a quick clarifying question?

DR. SINGLA: Um-hmm.

CHAIRPERSON LUDERER: When you were talking about pesticides, were you specifically thinking about pesticides in consumer products or pesticides in general also as occupational?

DR. SINGLA: I was talking about pesticides in

general.

CHAIRPERSON LUDERER: All right. The next public comment is from Trudy Fisher.

MS. FISHER: Hi. Trudy Fisher. I just wanted to thank everybody, Breast Cancer Fund, NRDC, Science Guidance Panel, everyone with OEHHA and the Biomonitoring project for all your hard work. This is a project so dear to my heart. It means a lot to me.

And before I say anything else, I just wanted to say fabric softeners. I think of all the consumer products, they're probably one of the least necessary and most hazardous products around.

But as I just wanted to let you know, you know, 20 years ago, whenever it was, the product -- one of the chemical cocktail products that I was exposed to at work through the ventilation system was actually hexamethylene diisocyanate, at least that was one of the material safety data sheets that my employer gave me after the fact.

So just a little bit of insight, because there's so little understanding of it and so on. In the course of the seven years I was working in the building, I and most of my colleagues lost our sense of smell, probably from breathing those chemicals.

And, of course, after I left the building and detoxified, my sense of smell normalized. But as you

probably know, often people who've become overreactive, sensitized to chemicals, and so on, gain an ability to smell chemicals at very small amounts, very small. I mean I could smell mercaptan in a gas leak when PG&E couldn't get a reading on it in a building.

So I just want to urge you guys in areas where literature is very limited, there can be understanding gained through anecdotal, you know, understanding, and so on, from people who've been through it.

So thanks for all your help.

CHAIRPERSON LUDERER: Thank you. David -- the last commenter is David Edwards. I know that you already spoke. Did you have any additional comments?

MR. EDWARDS: (Shakes head.)

CHAIRPERSON LUDERER: Okay. Great. Thank you.

All right. Do we have any additional discussion and comments from the Panel or from any of our speakers today?

Sara.

MS. HOOVER: Yes. Sara Hoover, OEHHA. I just wanted to circle back to what's on our list, what's not on our list. I really liked Asa's idea of let's take a systematic look of what's on or off.

Just a clarification. For the designated chemical list, we have many VOCs on the designated

chemical list, because those were captured under CDC.

And I think one thing I wanted to raise in terms of intersection was a very interesting discussion at the GRSP, the Green Ribbon Science Panel, when there was a discussion of the product categories. And then there was a subsection of that where the different Panel members talked about what are some priority chemicals and priority products that might be of interest going forward.

And I was really struck -- I was working with Meredith preparing for this, and I looked back at these detailed notes, and so many of them that people raised are on our list already. So we've already captured them. So, for example, the non- -- the non-halogenated aromatic phosphates like triphenyl phosphate, tricresyl phosphate, that's on our list. We don't have methods for that as yet. Triclosan was raised again as an important consideration. Lead-containing products were still considered very important. PCBs in pigments. Apparently, there's still some PCBs out there, that was raised. We don't have PCBs listed as a class.

You know, so again there's that limitation. I think that was a good point to pick up other things that we don't have listed as a class, like phthalates, PFCs, those sorts of things that are getting substituted.

Also, plasticizers, you know, a functional group.

Functional -- various functional groups were raised like plasticizers, adhesives, that sort of thing. And then the other -- another thing that was mentioned was epoxy-based food packaging and other epoxy-based plastics, and -- for example, we have BADGE and BFDGE on our list.

So I think actually there is quite a lot of opportunity for -- already actually looking for linkages between the Safer Consumer Products going forward and what we're already -- what we've already picked out as important emerging chemicals, and again, the gap in the, you know, resource issue, and looking at new methods is difficult.

And the other thing, when Thu was coming, we had a discussion, and I, again, raised the same issue about okay we know about the toxic trio, but what about what's coming in behind. And so I think that would be a very interesting place to look at non-targeted screening, you know, to -- or semi-targeted screening. As Jianwen likes to say, it's not completely non-targeted, but looking for certain types of chemicals and seeing what's coming in behind some of these known toxicants.

So I think there's many different opportunities. And I liked Asa's concept. And maybe you can have a little bit of discussion about some specific directions. Like you gave us a specific direction to go and

systematically look at our lists. So we can do that, and we can talk about ways to do that.

But other ideas -- besides VOCs, we've heard VOCs as an important class to consider, you know, going forward with regard to consumer products and personal care products. But are there other things we're missing? You know, just thinking about are there other product categories, are there other functional uses? We've done some functional use categories on our list, like flame retardants. Are there other functional use categories we should be looking at related to consumer products or any other types of chemicals that people are aware of, or are concerned about, or just anything, you know, that's out there?

I named a few that came up in the GRSP, but we've covered those. So that was kind of my idea for you in the next little while to think about any specific recommendations you might have about either collaborations or chemicals that we might want to go forth and look at.

CHAIRPERSON LUDERER: Dr. Quint.

PANEL MEMBER QUINT: I have so much trouble with this thing. Okay. It's on. Julia Quint.

This isn't a class of chemicals to recommend, but I think something that we do in the Biomonitoring Program that could be really of use to certainly the SCP program

is, you know, looking at the emerging chemicals, because what -- in the SCP Program, I mean, it's very possible that people will offer as alternatives some chemicals that are not on the list. As I said before, that could be regrettable substitutions.

And with this Program, we've, you know, looked -- tried to keep track of what's emerging and list those in classes. And the way I see that working with SCP is those could be -- you can't tell people they're not on a list, so they can't be candidate chemicals if they're not on a list, or COCs, but you could say that these were not -- are not considered safer alternatives as you've done with the n-methylpyrrolidone for the priority product of the paint thinners -- paint removers.

So I think that that would be really interesting, so that we could -- it's not -- the non-targeted is important as well, but there are some things that we know right now are suspect chemicals, and we've already identified those. And I think exchanging that information would be really important.

And that also applies to CARB to be aware of some of these chemicals. They do take a look at when they're exempting VOCs, and -- you know, they do have OEHHA look at them, but I think also to -- being anticipatory of some of these classes, where, you know, they haven't made

lists, they won't be regulated for a while, but to be avoided, I think, would save us all a lot of headache.

DR. WILLIAMS: So that was one point that excited me when I was preparing for this talk was the fact that you do look at chemicals of emerging concern. You're kind of ahead of the curve. And I did want to point out that there is a nomination process in our regulations. So although we use the authoritative lists as our default, people can nominate chemicals to add to the list based on emerging concerns. So I did want to make sure people were aware of that.

CHAIRPERSON LUDERER: Dr. Quintana.

PANEL MEMBER QUINTANA: Hi. There's a paper that came out recently in Environmental Health Perspectives called *New Exposure Biomarkers as Tools for Breast Cancer Epidemiology, Biomonitoring, and Prevention: A Systematic Approach Based on Animal Evidence*. And they have tables and tables of chemicals in there based on animal data.

And I looked at it briefly. It seemed like we were already covering many of them, but I guess, since you asked for recommendations, I would recommend that you go through this paper, and review the evidence, and see if there are consumer products or, in general, other categories in this paper which seems to be a quite extensive review. The lead author is Ruthann Rudel.

CHAIRPERSON LUDERER: We've heard quite a bit this afternoon I think already about the fragrance chemicals. And another -- and you were sort of talking about classes of uses, another one to think about might be air fresheners, which basically consist of fragrance chemicals largely. And that was -- I think that ties in with the idea of the scent marking. I know that's not exactly what you called it, but I that's basically what it is. So that might be something to pursue.

Dr. Quint.

PANEL MEMBER QUINT: Julia Quint. I raise isocyanates. I don't know if I need to say it more formally, but I think that that would be a good group, and also the acrylics. The method -- the methyl methacrylate and all of those. They're a large group and cause asthma in all forms. And what applies to the polymers for the acrylics also applies to the isocyanates as well.

CHAIRPERSON LUDERER: Dr. McKone.

PANEL MEMBER McKONE: A slightly different topic, but still, you know, in the -- sort of the interest of brainstorming. You know, we talked about -- you know, we tend to be somewhat focused on chemical markers in blood and not affect markers. And one of the things we haven't talked about is -- and again, it might be outside of our realm, but a lot of the fragrances and the chemicals --

you know, we talked about this a bit in the nail polish, but in these scent marking chemicals. I just looked it up. It's fascinating. I mean, there's whole companies -- this is a big business, right, and thousands of companies are purchasing scent markers.

(Laughter.)

PANEL MEMBER McKONE: But I know of enough people who are really chemical sensitive. And, you know, what you -- it's hard to find something in their blood, but you can test them for sensitivity. And there are -- allergists now have panels of hundreds of chemicals that they can -- you know, they -- it's a bit painful, but they put all these chemicals on your back and they can measure sensitivity to a broad range of chemicals.

And I'm just wondering if that isn't an indication that somebody is -- you know, again, it's not a direct marker. It's an effect marker, but it relates to somebody who's been pushed over the edge. And, you know, just a thought about, is this something we should be looking at, because I think we're going to have a very difficult time finding the people who have been affected or are being exposed to low levels of chemicals that are actually potentially harmful to them because of their -- they've been exposed to so many of these, they get pushed over the -- their immune system gets overwhelmed.

So, you know, just a future topic of thinking about how we might look at markers for very low levels, where we can't find the chemicals in blood or breath, but we could find them by some other mechanism.

CHAIRPERSON LUDERER: Laurel.

DR. PLUMMER: So another group of chemicals that we've talked about benzophenone-3 is a member of. And it's actually -- in addition to being used in sunscreens, which is an obvious use, it's actually limited to being only, I think, between like six and ten percent of the formulation.

So if you look at a sunscreen label, you'll see quite a few other UV stabilizers, UV filters that are used. And some recent research we've done in preparation for the benzophenone-3 FOX paper led us to some really interesting evidence about use in plastics. And this applies to consumer products in a couple of ways. It's added directly to products in some cases. It's added to packaging to prevent degradation of the packaging itself, but also the contents of the packaging.

And so there has -- there's, you know, continuous research going on about is it leaching, you know, into the product, is it because it's in the product because it was added, you know, trying to figure out the source of exposure there.

So I think -- and it's also been found in environmental samples, water, things like that, too. So that might be something of interest to the group.

CHAIRPERSON LUDERER: Thank you.

Any other comments, thoughts, from Panel or the public, or any of our speakers this afternoon?

Did you want us to go back to any of those questions?

MS. HOOVER: (Shakes head.)

CHAIRPERSON LUDERER: Okay. I just saw a raised hand.

Jianwen. Dr. She.

DR. SHE: Just one comment for Dr. Quach's concern about today's method is it sensitive enough? As you can see, we did this HERMOSA Study, which included phthalates.

And then in the hair salon, you talk about DBP, dibutyl phthalate, this is in occupation populations. Our method is designed for general populations, so you do not need to concern we cannot see before the workshift or after the workshift. So I think this part is we are very proud. And then we always compare with the CDC. We can reach the very, very low level. You do not need to worry we're going to see any difference or the result is not reliable.

Regarding the second comment on VOC. VOC may be a very important issue, but I'm not sure biomonitoring will be ready to us. The reason, like Dr. Quint say, how you catch this instantaneous exposure, and then bring the sample back to the lab, you need to consider holding and times, so that challenge is both laboratory may not have so much experience, and then consider CDC ask us to provide more detail.

The Program may need to think, okay, is this the best tool or field test maybe a different monitoring tool to use. So just provide all this information to the Panel and the public, our known laboratory, may have some limitation.

Thank you.

CHAIRPERSON LUDERER: Yes. Dr. Solomon.

CAL/EPA DEPUTY DIRECTOR SOLOMON: Gina Solomon. This meeting has been fantastic. I've learned a lot, and I think there's some really great things that are going to -- that are coming out of the meeting and really good ideas. I did hear some good ideas or thoughts come from public commenters and from staff. And I didn't hear clear responses from the Panel about whether you were interested in really having, you know, the Program pick up on them.

One of them I think from one of the public commenters was to look at phthalates as an entire class.

And since that issue kept coming up today about that -- you know, certain phthalates in consumer products, I just sort of wanted to see if that was something that the Panel feels should be -- might be something staff should look at?

And then I also think I heard a similar recommendation around the perfluorinated chemicals. Again, very relevant to consumer products, and one of these areas where there's very rapid substitution. I know it's something the Safer Consumer Products Program is looking at. So, you know, again, does the Panel feel that that should be a priority for staff to look at and bring back as a somewhat broader class?

And then similarly with these UV stabilizers, I actually hadn't -- I wasn't aware of that, but it's -- it intrigued me and it seems like those are very biomonitorable.

Honestly, I'm a little more concerned about the VOCs at the moment just on the technical front. And so I want to make sure that we're taking on things where we kind of -- where it would be fairly easy to build on the lab methods that we already have, and sweep in and bring in more information without having to take on something super difficult from a lab perspective. And so I just wanted to put those thoughts out.

Thanks.

CHAIRPERSON LUDERER: Thank you.

Dr. Bradman, did you have a response to that. It looked like you --

(Laughter.)

PANEL MEMBER BRADMAN: Actually, I'm not quite sure if I'm ready to respond, but maybe I'll try. Gina, I always appreciate your capacity to take the amorphous and make it concrete.

(Laughter.)

PANEL MEMBER BRADMAN: Which I think that's maybe a little bit what's going on right here. And maybe we should have some specific discussions on what kind of concrete recommendations we want to make as a Panel ideally in the next 15 minutes before we adjourn.

MS. HOOVER: Just one note, we have about eight minutes left in this period. Then we have a ten-minute open public comment period. So I don't know if we actually will have any open public comment, but we have a little bit shorter time, so I would sort of cut to the chase.

PANEL MEMBER BRADMAN: Okay. Well, one concrete recommendation, you know, I wanted to follow up on, was that we have some sort of --

MS. HOOVER: There's nothing for open, so go for

it. Go back to 15 minutes.

PANEL MEMBER BRADMAN: Okay -- that we have some sort of systematic evaluation of what we have already designated and prioritized, and where they fall in the realm of consumer products.

And then I feel like we need some information gathering process, maybe even some sort of crowd sourcing or nomination or input from our own professional experience in staff and other researchers to see whether we want to grow that list.

I mean, I think the chemicals that Gina just raised I think we're all interested in. I mean, I've done work on PFCs in child care. We've all done work on -- many of us have done work on phthalates. And I thought phthalates already were one of our priority compounds. So I think --

MS. HOOVER: Phthalates as a class, Asa. So we have phthalates that were already measured by CDC, which were designated. And those were put on the priority list, not as a class.

PANEL MEMBER BRADMAN: Okay. I mean, everything Gina mentioned I know we think is important. So how do we kind of cut through the fog to be concrete? So I guess I want to -- I'm asking that we can have an interaction with staff to kind of systematize that evaluation.

CHAIRPERSON LUDERER: I mean -- so are you -- but you're suggesting that this would be something that we could do at a future meeting to go through the list of designated chemicals and the priority chemicals, see what's in consumer products, and kind of maybe prioritize those? I know, that's a --

PANEL MEMBER BRADMAN: Yes. I mean, that would be a recommendation. I certainly would be comfortable with making a decision about phthalates.

(Laughter.)

CHAIRPERSON LUDERER: Dr. Cranor.

PANEL MEMBER CRANOR: I don't like to slow things up, and I certainly share the enthusiasm for what's occurred today, but it does seem to me in the spirit that Asa has suggested, maybe we can do something quickly today. But that's why I suggested earlier that there was staff work that could pull this together and give us something much more systematic to work on next time.

Unfortunately, that's three or four months from now. That's too bad, but I don't know of another way to speed it up. But the staff could have a whole presentation next time, so that we could be a little better organized. It's kind of come out in various ad hoc ways today, you know, except for a couple of the suggestions that Asa has made, and no doubt Sara has some

ideas as well.

MS. HOOVER: I was just going to say that with regard to your suggestion for November, we're already planning something that would fit really well with this, which is an item to do agenda planning for the next year. So we'd like to get input from the SGP. So we could actually use a lot of the suggestions we've gotten here, bring them for a discussion in November to pick what would be our highest priority agenda items to pursue for the next three SGP meetings in the next calendar year. So that would be a way to approach it.

I guess I think what Gina was trying to say and what we were trying to say is I don't think anyone would oppose us like looking into phthalates as a class, PFCs as a class, UC stabilizers, actually there was a recommendation. And, Marion, you might remember, but a long time ago, we were looking at BP-3 as a priority chemical. And it was -- the Panel didn't act on it and said, well, bring us back the group of sunscreens. Why should we look at one?

So that's already something that we could go back and cover. So I think we have some specific recommendations. I really like your systematic review idea, so we can do some of that work. And then if something else pops out from our systematic review, we

could include that in a discussion in November.

So does that seem like a reasonable approach?

Okay. And then I think just -- I don't know if this is the time for --

CHAIRPERSON LUDERER: I think so.

MS. HOOVER: So we'll go ahead.

CHAIRPERSON LUDERER: Yeah. So Dr. Lauren Zeise the Deputy Director for Scientific Affairs of OEHHA is going to do a summary of the key action items that have come out of this discussion today.

Dr. Zeise.

DR. ZEISE: Well, I think we've had quite a good discussion of some of the key action items coming out. So I think I'm going to try not to repeat the issue around doing a systematic review and what that might look like, and also bringing to the Panel, as an agenda item, a discussion of what will be coming up in upcoming meetings.

So I'll set those aside, and just remind some of the other points from the discussion. The first thing was that, in addition to seeing and hearing about the different chemical levels being measured, you'd really like to have a discussion around some of the studies. And you'd like to hear from some of the collaborators as well as staff on what we're finding in the Program's focus on the specific studies. So I'm seeing that I captured that

okay, and you don't want to add to that, is that right?

Okay. And then around non-targeted sampling, what I heard was that there -- the issue on identifying metabolites still continues to be a very big issue for non-targeted sampling. And we do have a group that's beginning to look at that issue, but that seems like something to put on this list of things coming back to the Panel. How do we tackle metabolites? How do we address that issue and non-targeted, so we have the right look-up list as we go forward?

Then another piece was in thinking about non-targeted sampling, and this whole issue of illegal substances, and being very careful about how we develop our study designs, how we go forward on this whole issue of non-targeted, given the issue around drugs and other illegal substances.

Then, let's see, we had many -- throughout the day, this issue of not having adequate toxicological coverage around the whole issue of sensitization, asthma, respiratory endpoints. So I think I heard a clear message that the Program needs to be alert around those sets of endpoints. And really as we bring up chemicals, we consider -- isocyanates was something that was brought up. But as we bring forward to the Panel, through our discussion of different designated chemicals, to really be

careful about this whole issue of sensitization and try to get as much information we can around those endpoints.

And I heard from Tom even kind of taking it the next step, which is, well, what about some biological markers, and should the Program begin to think about that issue?

Let's see. And we already talked about the whole issue of systematically looking at our chemical list. But I guess also we heard a number of comments around the consumer product sensitivity -- well, studying populations -- in terms of studying populations, we talked a lot about, you know, the systematic approach to chemicals, but also the Panel brought up this whole issue of in terms of studying populations, looking at workers, considering study designs and collaborators for intervention studies. And then in sample collection methods thinking about how to catch transient chemicals.

And then in terms of creating this list, we were encouraged to develop relationships with the ARB to look at their survey. And that was one source of chemicals for consumer products, but also forming kind of an interagency or inter-program group to think about how we establish this consumer list to look at.

And I think that's it.

DIRECTOR ALEXEEFF: There were at least two other

items. One was I think for staff to look at the methacrylates as a group and see what's there.

MS. HOOVER: Yes.

DR. ZEISE: Oh, yeah, so maybe I should --

DIRECTOR ALEXEEFF: Do we know a couple of them?

DR. ZEISE: Maybe I should walk through then the chemicals I captured.

MS. HOOVER: Yes.

DIRECTOR ALEXEEFF: Okay. And then well -- and the other thing I just wanted to mentioned was the consideration of that recent review article that Dr. Quintana mentioned about chemicals. So look into that.

DR. ZEISE: Yes. Maybe -- yeah, let me walk through the list of chemicals then, because I think -- so we heard fragrances, isocyanates, acrylates, UV stabilizers, VOCs, phthalates as a class, perfluorinated chemicals, and breast and mammary carcinogens. Okay.

CHAIRPERSON LUDERER: Okay. I thought I would check to see if we had any public comments? And I see one for sure. Any -- and okay. So two. Sorry, go ahead.

PANEL MEMBER QUINTANA: And just to add to your summary of action items, I heard from many members of the public today their disappointment in the funding shortfall that was announced today. And I'm not sure if the Scientific Guidance Panel could echo that sentiment that

the funding reductions will prevent some of the exciting science, in terms of method development and other things, but -- I'm not sure if it's appropriate, but I'd like to add that.

CHAIRPERSON LUDERER: Okay. So we have Nancy Buermeyer from the Breast Cancer Fund, and --

MR. ENDLICH: Brian Endlich, DTSC.

CHAIRPERSON LUDERER: Okay. Nancy, did you -- since I saw you wave there.

MS. BUERMEYER: Nancy Buermeyer, Breast Cancer Fund. I wasn't sure if we had missed the last opportunity, but really supportive of doing the systematic review of the chemicals. And I was going to request that there be some mechanism for the public to add input before we actually get to the meeting.

So, for instance, we're developing a list of chemicals we want to share with retailers around cosmetics to say to them you should not carry cosmetics with these chemicals in it. So is there a way to get that into the conversation before we get here, because by the time we get here it's hard to look at a list of 90 chemicals?

So just a request for there to be some kind of call to the public to have input into that process as we go.

And I think your idea about having the Science

Guidance Panel weigh-in on the funding thing is awesome. So maybe -- I would like to work with you all to see if there could be like a letter signed by all of you to the legislature or to the Governor that we could use to try to bring this Program back up to full capacity.

Thanks.

CHAIRPERSON LUDERER: Thank you very much.

Will you please introduce yourself.

MR. ENDLICH: Yes. I'm Brian Endlich, a toxicologist with Department of Toxic Substances Control. I just want to make a quick comment about the fragrances and the other irritant sensitizers that we're trying to get a -- wrap our hands around, and the idea of scent branding and exposures that we might not be able to capture through biomonitoring.

And I was just thinking along the same lines as Dr. McKone about are there some fast reacting markers of exposures and effects that we could look at within the immunological world, such as cytokines, chemokines, histamines, things like that. So there might be opportunities for some collaborative studies with various immunology groups at local universities or something like that.

Thank you.

CHAIRPERSON LUDERER: Okay. Thank you very much.

Do we have -- before we wrap-up, Dr. McKone, did you have a comment?

PANEL MEMBER McKONE: Well, are we going to make a consensus finding on the -- our concern about the shortage of funding? I mean, I don't know how we quite do that other than -- it was mentioned, but I don't know how we follow up.

CHAIRPERSON LUDERER: Right. I mean, is it -- can we write a letter as a Panel? Is that something that we are permitted to do?

I think there's probably consensus on the Panel that we would be happy to do that.

STAFF COUNSEL KAMMERER: (Nods head.)

PANEL MEMBER McKONE: Because I didn't want to leave that without commenting on it.

CHAIRPERSON LUDERER: No, right.

Dr. Alexeeff.

DIRECTOR ALEXEEFF: So before the Chair wraps-up, I just wanted to thank the Chair for running such an excellent meeting. And we had a lot of interesting ideas, and she kept them all under control, and helped organize this meeting. So I just wanted to thank her, and, of course, the Panel members and the public for the participation.

CHAIRPERSON LUDERER: All right. Thank you,

everyone actually for participating in this very excellent meeting, the speakers, the staff, the Panel, and the members of the public. And with that, I would like to remind everyone that we do have another meeting coming up. November 6th is the date for the next SGP meeting, which is in Sacramento. And there will be a transcript of the meeting posted as always on the Biomonitoring California website. And I know that there's always an email sent out to the listserv when that is posted.

And I also wanted to remind everyone that this facility closes at 5:00 p.m. promptly. So if you have ongoing conversations that you would like to hold to -- you don't want to get locked into the building.

(Laughter.)

CHAIRPERSON LUDERER: All right. So with that, I'd like to adjourn the meeting and thank you all again.

(Thereupon the California Environmental Contaminant Biomonitoring Program, Scientific Guidance Panel meeting adjourned at 4:30 p.m.)

C E R T I F I C A T E O F R E P O R T E R

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

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

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

IN WITNESS WHEREOF, I have hereunto set my hand this 21st day of July, 2014.

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