

CALIFORNIA ENVIRONMENTAL CONTAMINANT BIOMONITORING PROGRAM

(BIOMONITORING CALIFORNIA)

SCIENTIFIC GUIDANCE PANEL MEETING

CONVENED BY:

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

STATE OF CALIFORNIA

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

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10:31 A.M.

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

PANEL MEMBERS:

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

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

Oliver Fiehn, Ph.D.

Eunha Hoh, Ph.D., M.S.E.S.

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

Thomas McKone, Ph.D.

Veena Singla, Ph.D.

José R. Suárez, M.D., Ph.D., M.P.H.

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT:

Lauren Zeise, Ph.D., Director

Russ Bartlett, M.P.H., Senior Environmental Scientist

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

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH:

Lauren Baehner, M.P.H., Research Scientist II, Exposure
Assessment Section, Environmental Health Investigations
Branch

Jennifer Mann, Ph.D., Research Scientist IV, Exposure
Assessment Section, Environmental Health Investigations
Branch

Jed Waldman, Ph.D., Chief, Environmental Health Laboratory

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

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

GUEST SPEAKERS:

Katie Butler, M.P.H., D.A.B.T., Senior Staff Analyst, Los Angeles County Department of Public Health

Sara Cody, M.D., Health Officer, Santa Clara County

Karen Cohn, M.S., C.I.H., Program Manager, Children's Environmental Health Promotion Program, San Francisco Department of Public Health

ALSO PRESENT:

Ms. Ludmilla Bade

I N D E X

	PAGE
Welcome and Panel Business	
Lauren Zeise, Ph.D., Director, Office of Environmental Health Hazard Assessment (OEHHA)	1
Overview of the Meeting	
Meg Schwarzman, M.D., Chair, Scientific Guidance Panel (SGP)	6
Program Update	
Presentation: Nerissa Wu, Ph.D., M.P.H., California Department of Public Health (CDPH)	8
Panel Questions	24
Public Comment	31
Panel Discussion	31
Community Exposures to Metals - Findings from the Biomonitoring Exposures Study (BEST) and the Asian/ Pacific Islander Community Exposures (ACE) Project	
Presentation: Jennifer Mann, Ph.D., CDPH	52
Panel and Audience Questions	67
Presentation: Lauren Baehner, M.P.H., CDPH	77
Panel and Audience Questions and Discussion	91
Letter of Support for Biomonitoring California from SGP	112
Afternoon Session	118
Community Exposures to Metals - Perspectives from County Health Departments	
Introduction to Session: Dr. Schwarzman	118
Guest Discussant Remarks	
Katie Butler, M.P.H., D.A.B.T., Senior Staff Analyst, Los Angeles County Department of Public Health	120
Sara Cody, M.D., Health Officer, Santa Clara County	129
Karen Cohn, M.S., C.I.H., Program Manager, Children's Environmental Health Promotion Program, San Francisco Department of Public Health	136
Panel and Audience Questions	148

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

	PAGE
Afternoon Session - Panel Discussion and Public Comment	
Panel Discussion and Public Comment	155
Brief Summary and Next Steps - Dr. Zeise	194
Possible Topics for 2019 SGP Meetings and Open Public Comment	
Presentation: OEHHA	196
Open Public Comment	204
Wrap-up and Adjournment - Dr. Schwarzman	204
Reporter's Certificate	206

P R O C E E D I N G S

1
2 MR. BARTLETT: We're going to begin the meeting
3 shortly. Before we start, today's meeting is available
4 via webinar, so please speak directly into the microphone
5 and introduce yourself before speaking. This is for the
6 benefit of the transcriber as well as those participating
7 on the webinar. For those of you listening via the
8 webinar, please make sure you microphones are muted for
9 the entirety of the meeting.

10 The materials for the meeting were provided to
11 SGP members and posted on the Biomonitoring California
12 website. A small number of copies of the meeting
13 materials are available at the table near the entrance to
14 the auditorium.

15 We'll take a break at 1:25 p.m. for lunch, and
16 take another short break at about 3:20. And the restrooms
17 are located at the opposite end of the hall from where we
18 are now on either side. In case of an emergency, we have
19 exits here in the front on either side. As you exit the
20 emergency door, immediately turn to the right and then to
21 the left.

22 I'd now like to introduce Lauren Zeise, Director
23 of the Office of Environmental Health Hazard Assessment.

24 DIRECTOR ZEISE: Thank you, Russ.

25 Good morning. I'd like to welcome the panel and

1 the audience to this meeting of the Scientific Guidance
2 Panel for the California Environmental Contaminant
3 Biomonitoring Program, also known as Biomonitoring
4 California.

5 So thank you all for participating and sharing
6 your expertise. The Panel last met on August 22nd. The
7 Panel heard about ongoing program activities, and we had a
8 very detailed look at biomonitoring results that we have
9 so far on per- and poly-fluorinated substances, the PFAS
10 chemicals. The meeting discussed measuring PFAS chemical
11 exposures in the context of drinking water, consumer
12 products, intervention studies. And we also discussed
13 approaches to track PFAS chemicals, and to expand the
14 number of chemicals monitored in the environment and
15 biomonitored.

16 So we've posted a summary of our discussion and
17 recommendations for the Program from that meeting, along
18 with the complete transcript at biomonitoring.ca.gov.

19 So the theme of today's meeting is community
20 exposures to metals. We're looking forward to exploring
21 some interesting findings on metals from our -- from two
22 program studies, and also having a rich discussion with
23 our guests from county health departments in Northern and
24 Southern California.

25 So before turning the meeting over to our Panel

1 Chair, Meg Schwarzman, I'd like to first acknowledge Dr.
2 Marion Kavanaugh-Lynch, who served as a member of the
3 Scientific Guidance Panel since its inception serving for
4 more than ten years. While she's not here today, we wish
5 her well as she continues in her role as Director of the
6 California Breast Cancer Research Program, where she
7 develops strategies and guides priorities for California's
8 substantial investment in breast cancer prevention and
9 treatment research.

10 So, now what I'd like to do is have you join in
11 welcoming our newest Panel Member, Eunha Hoh, who was
12 appointed by the Speaker of the Assembly. Eunha is a
13 professor of Environmental Health in the School of Public
14 Health at San Diego State University. Her research
15 focuses on diverse environmental chemicals and their
16 impact on human and ocean health.

17 Chemicals include brominated and chlorinated
18 flame retardants, polycyclic aromatic hydrocarbons, and
19 components of third-hand tobacco smoke.

20 Eunha also investigates emerging chemicals and
21 has developed a novel non-targeted analytic approach for
22 detecting a broad range of organic chemicals in various
23 types of environmental matrices. She holds a Ph.D. in
24 Environmental Science from Indiana University.

25 So welcome, Eunha.

1 Now, I'm going to administer the oath of office
2 to you. And so if you'd like to stand and raise your
3 right hand, and repeat after me.

4 I --

5 PANEL MEMBER HOH: I --

6 DIRECTOR ZEISE: -- state your name --

7 PANEL MEMBER HOH: Eunha Hoh

8 DIRECTOR ZEISE: -- do solemnly swear --

9 PANEL MEMBER HOH: -- do solemnly swear --

10 DIRECTOR ZEISE: -- that I will support and
11 defend --

12 PANEL MEMBER HOH: -- that I will support and
13 defend --

14 DIRECTOR ZEISE: -- the Constitution of the
15 United States --

16 PANEL MEMBER HOH: -- the Constitution of the
17 United States --

18 DIRECTOR ZEISE: -- and the Constitution of the
19 State of California --

20 PANEL MEMBER HOH: -- and the Constitution of the
21 State of California --

22 DIRECTOR ZEISE: -- against all enemies foreign
23 and domestic --

24 PANEL MEMBER HOH: -- against all enemies foreign
25 and domestic --

1 DIRECTOR ZEISE: -- that I will bear truth faith
2 and allegiance --

3 PANEL MEMBER HOH: -- that I will bear truth
4 faith allegiance --

5 DIRECTOR ZEISE: -- to the Constitution of the
6 United States --

7 PANEL MEMBER HOH: -- the Constitution of the
8 United States --

9 DIRECTOR ZEISE: -- and the Constitution of the
10 State of California --

11 PANEL MEMBER HOH: -- to the Constitution of the
12 State of California --

13 DIRECTOR ZEISE: -- that I take this obligation
14 freely --

15 PANEL MEMBER HOH: -- that I take the obligation
16 freely --

17 DIRECTOR ZEISE: -- without any mental
18 reservation --

19 PANEL MEMBER HOH: -- without any mental
20 reservation --

21 DIRECTOR ZEISE: -- or preponderance of
22 evasion --

23 PANEL MEMBER HOH: -- or purpose of evasion --

24 DIRECTOR ZEISE: -- and that I will well and
25 faithfully discharge the duties --

1 PANEL MEMBER HOH: -- and that I will well and
2 faithfully discharge the duties --

3 DIRECTOR ZEISE: -- upon which I am about to
4 enter --

5 PANEL MEMBER HOH: -- upon which I am about to
6 enter.

7 DIRECTOR ZEISE: Welcome to the Panel.

8 PANEL MEMBER HOH: Thank you.

9 (Applause.)

10 DIRECTOR ZEISE: All right. Now I'll turn the
11 meeting over to Meg Schwarzman.

12 CHAIRPERSON SCHWARZMAN: Is that okay.

13 Good. Thank you so much, Lauren. And welcome,
14 Eunha. Glad to have you.

15 I want to, as usual, announce the goals for
16 today's meeting. As Lauren mentioned, we're focused on
17 community exposures to metals. So this morning, we will
18 hear a Program update, followed by California
19 Biomonitoring staff who will present findings on metals
20 from two studies, the BEST Study, Biomonitoring Exposures
21 Study, and the Asian/Pacific Islander Community Exposures
22 Project, or the ACE Project, which we've discussed at
23 various times on this Panel. We'll have time for
24 questions and Panel and audience discussion before we
25 break for lunch.

1 Then in the afternoon, we're going to start with
2 remarks from our guest discussants who are here with us
3 from several county health departments. And they will
4 share their experiences addressing community concerns and
5 questions about environmental contaminants, including
6 metals. And the major goal of that discussion will be to
7 look at how to engage with communities about biomonitoring
8 results, and what we should do to follow-up from those
9 results.

10 We'll also look for possible ways that
11 Biomonitoring California can share their expertise and
12 collaborate with county health department -- departments
13 on these topics.

14 And then to wrap-up today's meeting, we'll hear
15 about some possible topics for the 2019 meetings, and have
16 time as usual for open public comment.

17 So we won't, as in the last meeting or two, be
18 using the comment cards, because it helps facilitate a
19 more free-flowing discussion period. If you want to speak
20 during the question or discussion periods, you can come to
21 the podium or raise your hand. And I will be looking out
22 and Sara will be looking out, and others will be. So
23 we'll call on you at an appropriate moment in sort of the
24 flow of conversation.

25 And for the benefit of the transcriber, please

1 clearly identify yourself before providing your comments
2 and write your name and affiliation on the sign-in sheet,
3 so that he can use that as check against what you say,
4 just to get your name right.

5 So if you're joining the meeting via webinar, you
6 can provide comments via email biomonitoring@oehha.ca.gov.
7 That's O-e-h-h-a dot C-a dot gov. And relevant comments
8 will be read allowed, paraphrasing them if necessary, if
9 they're long.

10 So please keep your comments brief and focused to
11 the items under discussion. And if we need to, we'll
12 impose time limits, but we'll see how the discussion goes.
13 So I want to start the rest of -- the body of the meeting
14 by introducing Nerissa Wu. She is Chief of the Exposure
15 Assessment Section in the Environmental Health
16 Investigations Branch, EHIB, at the California Department
17 of Public Health and overall lead for Biomonitoring
18 California and she'll provide an update on current program
19 activities.

20 (Thereupon an overhead presentation was
21 presented as follows.)

22 DR. WU: Does that work?

23 (Yes.)

24 DR. WU: Okay. Hi, everyone. Good morning and
25 thanks everyone for being here, for those of you joining

1 us on the phone, and welcome, Dr. Hoh. Very nice to have
2 you here with us.

3 I am going to start off with a few project
4 updates, and then I'm going to turn to some thoughts about
5 program directions and priorities.

6 --o0o--

7 DR. WU: So last time we were here, I summarized
8 the recruitment efforts and study enrollment for the first
9 region of the California Regional Exposure Study, which
10 started off in Los Angeles.

11 --o0o--

12 DR. WU: And here's where we are now. As we
13 discussed, we have 430 participants who enrolled in Los
14 Angeles. At this point, we have finished our early
15 notification calls. And those are calls that go out to
16 participants who have an elevated arsenic, cadmium, lead,
17 or mercury level. And actually later this morning, we'll
18 be going into a little more detail about that protocol,
19 why and how we do early notification calls. So I'm not
20 going to dwell on it, but just to say that of the 430
21 participants in Los Angeles, 66 of them did receive an
22 early notification call.

23 We have lab results for all of our L.A.
24 participants from our labs for metals and for the per and
25 polyfluoroalkyl substances, the PFASs. Everyone in the

1 study got those analytes. And then we also selected a
2 subset of participants, 160 people who will have an
3 analysis for 1-nitropyrene, the biomarker of diesel
4 exposure. And we sent those samples out to Chris Simpson
5 at the University of Washington who has presented to this
6 Panel before.

7 That data is also available to us. We're in the
8 process of going through it, cleaning it up, and getting
9 it ready for results return. And we'll be -- we'll be
10 getting those packets out in January 2019.

11 We were not able to complete our phenols analysis
12 on time for this packet. We have a subset of 60 to 100
13 participants who will also get phenols analyses, but we
14 hope to do a second round of results return in the spring
15 with those.

16 --o0o--

17 DR. WU: And for those of you who have not seen
18 one of our results return packets before, I have one, on
19 the phone. I am holding up a packet. Sorry you can't see
20 it. The packet includes a cover letter reminding
21 participants that they signed up for the study, what it's
22 about. And then we have a two-pager, which goes into some
23 frequently asked questions, what do I do with these
24 results, how do I interpret them, how do I get more
25 information on this?

1 And then we have individual results, which also
2 include some comparisons to numbers from the study, as
3 well as some NHANES numbers.

4 MR. BARTLETT: Can you fast forward.

5 --o0o--

6 DR. WU: There we go.

7 Okay. And for each chemical that we return,
8 there's also a chemical fact sheet that accompanies it,
9 where are places that I might have become exposed, what
10 can I do to reduce my exposure. And even though this
11 packet is something that we've put together a number of
12 times and we've gone through this process, it's always
13 very involved. We have a lot of text to convey
14 complicated information to a lay audience. So there's
15 been a lot of work that goes into these packets over time.

16 And every time when we're updating them for any
17 study, it's still a lot of work to put them together.
18 With 430 participants, it's also a logistical challenge
19 getting the packets created, and have them go through a
20 lot of QA review to make sure they're all correct, and
21 then out the door. So it's kind of all hands on deck for
22 the next couple of months getting that done.

23 --o0o--

24 DR. WU: With results return for Region 1
25 underway, we're now turning our attention to Region 2.

1 --o0o--

2 DR. WU: And as we discussed last time, Region 2
3 includes Riverside, San Bernardino, Imperial, Mono, and
4 Inyo counties. And this slide just has some very basic
5 demographic information on those counties, much lower
6 population than L.A. county, less racially diverse.
7 There's a considerable percentage of non-English speakers,
8 predominantly Spanish. So these are some things that we
9 have to think about as we prepare our outreach and
10 recruitment strategies.

11 --o0o--

12 DR. WU: Our sampling goals are going to reflect
13 the population from the different counties with the great
14 majority of samples coming from the urban core of
15 Riverside and San Bernardino counties, indicated here as
16 Zones A and B. There's also this ring, the suburban and
17 urban areas surrounding that urban core. That's Zone C.
18 And then, of course, Imperial, and Inyo, and Mono counties
19 have a much lower population and that is reflected here in
20 our sampling goals.

21 --o0o--

22 DR. WU: We have a new postcard that has been
23 designed to go out to randomly selected households. And
24 there have been a lot of changes made to this postcard
25 since Region 1. We heard back from focus groups. We

1 DR. WU: So this is what our calendar looks like
2 for the next year: Getting our results return out for
3 L.A., that's in January; conducting outreach; getting our
4 field office set up; then we'll be in the field in Region
5 2 from January to May. During that time, we'll get our
6 second results return packet out for L.A. for phenols.
7 And then we're preparing to have some community meetings
8 in collaboration with our community partners in the spring
9 in Los Angeles.

10 After that, we'll be wrapping up in the field in
11 Region 2. Then they'll have early notification, data
12 processing, and getting ready for results return for
13 Region 2, while we're starting to look forward to Region 3
14 and doing outreach. And Region 3 will be in San Diego and
15 Orange County.

16 --o0o--

17 DR. WU: So now I am going to change directions
18 and talk about the Foam Replacement Environmental Exposure
19 Study. This is something that was initiated in 2015, and
20 we have not talked about too much here. We did this
21 project in conjunction with UC Davis, who has the Couch
22 and Foam Cushioning Replacement Study, and a sister
23 project the Foam Furniture Replacement Study in San Jose.

24 And they have 39 households, for which a house --
25 a baseline dust sample was collected in the households.

1 And then the households went and replaced or removed foam
2 furnishings. And replacements were made with non-flame
3 retardant options. And this was made possible, of course,
4 by Technical Bulletin 117, which was amended in 2013 to
5 require labeling of household furniture to indicate if
6 products contained flame retardant chemicals.

7 So the study team then returned at six, 12, and
8 18 months after the couch was replaced, and dust was
9 collected again at those time points. So for the FREES
10 Study, we recruited participants from the UC Davis study
11 participants for a biomonitoring component. And we went
12 out to collect blood and urine Samples at the same time
13 points.

14 --o0o--

15 DR. WU: The timeline for this project was
16 elongated somewhat. We started recruitment in 2015. But
17 between the time that it took to recruit participants and
18 then the time participants took to replace their sofa, the
19 six-month point ended up stretching out over a full year.
20 And so instead of collecting our final samples in 2017, as
21 anticipated, we were collecting samples until the spring
22 of 2018.

23 And this is actually something we talked about a
24 little bit last time with intervention studies, this is an
25 intervention study for which the intervention was

1 completely out of control of the study team, and we were
2 actually asking people to do something fairly significant.
3 If you've gone sofa shopping you know that there's a lot
4 of things you have to consider, not just the flame
5 retardancy of your coach.

6 So it took people a little while to do that. And
7 then we followed them for such an extended period of time,
8 that this was quite a long commitment for the
9 participants. We did lose some people to follow up during
10 the process of the study. We started out with 28
11 participants representing 18 households, and we ended up
12 with 22.

13 We do have all the results of blood and urine
14 analysis at this point. And the results return packets
15 went out in October of this year. So everyone should have
16 their biomonitoring data.

17 The dust data from UC Davis is in the process of
18 being prepared for results return, and hopefully will
19 becoming out by the spring. And then we are planning to
20 hold a participant meeting to talk about those results.
21 We are also really looking forward to diving into the data
22 to look at things like flame retardant levels, biological
23 levels over time, comparing the biomonitoring data with
24 the dust data. And, of course, we also have some foam
25 samples from a subset of the homes, both the old furniture

1 that was replaced, but also some of the new furniture,
2 because we want to verify compliance with those labels, so
3 that will help illustrate some of the -- some of the data
4 analysis that we do.

5 --o0o--

6 DR. WU: And this is a third study in the works,
7 East Bay Diesel Exposure Project. And this was initiated
8 in 2017 to look at parent-child pairs in the East Bay.
9 Fifty -- Fifty households each, 50 parent and child pairs
10 at two time points each. And this study was designed to
11 allow for comparison of diesel exposure within households,
12 across age groups, across communities, and across time.

13 --o0o--

14 DR. WU: So the project team has been very busy
15 enrolling participants in the study. Participants are
16 from across the East Bay from Hercules to San Leandro with
17 a focus on Richmond and Oakland. And the initial project
18 protocol included daily sampling in five household pairs
19 to get a look at variability over a one-week time period,
20 which is -- it's a pretty big ask of participants to take
21 that many samples. But amazingly, many more people than
22 anticipated were willing to participate in this intensive
23 urine collection. So there are now 15 households who are
24 participating in the daily sampling protocol. So the data
25 that comes out of that I think will be very interesting to

1 look at.

2 But to adjust for the total number of samples
3 that can be included in the study, the overall number of
4 participants has been reduced to 45, though the total
5 number of samples in the study remains the same.

6 So recruitment and sampling is ongoing. It will
7 end next month, December 2018, and results return and
8 community events are planned for 2019.

9 --o0o--

10 DR. WU: Here is our dreaded program budget
11 slide, with which you are all familiar. We are here in
12 '18-'19, where we have just the State baseline funding and
13 we are in our last year of the CDC cooperative agreement.
14 And, of course, the cooperative agreement may continue in
15 on the future, but it is uncertain whether or not we'll be
16 awarded another cooperative agreement, and also how much
17 funding will be available from the CDC.

18 --o0o--

19 DR. WU: So like anyone else living on a budget,
20 we have to maximize our impact within that budget. And so
21 it's important for us, as a Program, to keep an eye on
22 what are our are priorities, how can we best impact public
23 health with our means?

24 This prioritization helps inform our study
25 design, and our questionnaires, and the lab panels that we

1 choose to maintain. So we do periodically internally
2 revisit this question of what is important to us, what are
3 our priorities? And we continue to identify statewide
4 surveillance, environmental justice, and chemicals in
5 consumer products as our top priorities.

6 --o0o--

7 DR. WU: We do include stakeholder input in this
8 discussion. We've talked about the listening sessions
9 that we held across the state, funded by the stakeholder
10 bill of fiscal career '16-'17 to learn more about
11 community groups and what their priorities are and how
12 biomonitoring can best help them, and -- issues, air
13 pollutants, drinking water pollutants, pesticides were all
14 universal concerns across the state.

15 --o0o--

16 DR. WU: And any discussion of our priorities
17 really has to include consideration of our founding
18 legislation as well, which mandates some of our
19 activities. Legislation specifically names statewide
20 surveillance as a priority. Community-based surveys are
21 mentioned as a task, but only contingent on resources. So
22 that is -- that's something that we need to consider.

23 The legislation doesn't really provide details on
24 how statewide surveillance will be conducted, but there
25 are certain aspects of biomonitoring that are mandated,

1 such as the communication of our findings, and that's
2 something we do spend a lot of time doing. Also, the
3 conducting of statistical and epi analysis of our
4 biomonitoring results.

5 And there's also a requirement that we provide
6 guidance to other biomonitoring programs, which I think is
7 one of the ways in which our program has value, and
8 provides a lot of value to the scientific community at
9 large.

10 There's many important issues for us to study.
11 There's so many communities that are concerned with
12 chemical exposure and want to be biomonitored, and our
13 list of chemicals of concern is actually getting longer
14 and not shorter. And we are really frequently asked to be
15 part of studies, which we often cannot take on. But the
16 question remains how can we best serve biomonitoring and
17 public health within our means.

18 --o0o--

19 DR. WU: So even though we do talk about
20 community studies and statewide surveillance as an
21 either/or situation, or as sort of dichotomy, the CARE
22 study is actually a resource for community-based studies,
23 whether or not we conduct those community-based
24 investigations or some other entity does. The CARE study
25 will provide useful data, which can be used in comparison,

1 and may also generate hypotheses for researchers. And one
2 of the things we're committed to is getting data posted as
3 quickly as possible, so that it can be used in a timely
4 manner.

5 With the resources we have, we also can
6 contribute to projects and biomonitoring overall through
7 our expertise in designing questionnaires and study
8 design. We do share questionnaires with other researchers
9 across states and within California, and we'll continue to
10 do so. And I believe the ACE questionnaire has just been
11 posted on our Biomonitoring website, so it is accessible
12 to others to take a look at.

13 We have our lab expertise. And the big challenge
14 with a lab, of course, is that there are lots of chemical
15 panels of interest and of concern, but we're really not
16 set up as a commercial lab. And with our budget, we have
17 a lot of trouble maintaining instruments and staff, so it
18 can be difficult for us to participate in other studies.
19 We have trouble meeting project deadlines, if we can't
20 control our own budget.

21 So even though it's important to develop new
22 methods and cover many different panels, I think, as a
23 Program in some ways, we really need to specialize and
24 focus on fewer panels, so that we have a robust lab method
25 that's reliable for certain lab panels. But the question

1 state. And we would like to be able to condense this into
2 a four-year cycle, or ideally a two-year cycle, which is
3 what the original vision of the Program was. But this
4 would require much more staff, not only in the field, but
5 also in the lab, much more equipment to run those samples.

6 And when the Program -- just to give a sense of
7 where we are as a Program compared to our initial vision.
8 Our budget is about 1/7th or 1/8th of our -- the
9 current -- of the budget that was envisioned for the
10 Program, so that gives you an idea of the relative cost of
11 expediting the CARE Study.

12 We'd like to be able to design and implement
13 additional smaller studies, substudies, to look at
14 impacted communities, to examine specific public health
15 impacts or regulatory questions. We'd like to be able to
16 do intervention studies maybe nested within CARE, or look
17 at multiple samples per participant to look at some of
18 that variability and exposures.

19 And beyond CARE funding, I know we say this
20 often, but stable funding for the labs really is critical
21 so that those lab methods can be maintained and available,
22 not only for our work, but for other research --
23 researchers to take advantage of. And given the
24 importance of semi- and non-targeted screening, and the
25 fact that this funding from CDC can't be used for this

1 kind of work, it is really important for us to get stable
2 State funding to support that kind of work.

3 We'd also really like to be able to respond to
4 emergency events, like wildfires and other natural
5 disasters, and also respond to some of the community
6 requests regarding specific exposure sources that come to
7 us.

8 And finally, one of the things that we have not
9 been able to do as much of as a program is delving further
10 into our data than we already do. Our staff is quite
11 occupied with conducting the front end of studies. And so
12 it often takes quite awhile for us to really get into all
13 the data we collect. And we have piles of data, which
14 would be very interesting to analyze.

15 So for those of you who have doctoral students
16 who are curious, and smart, and looking for a project,
17 send them our way, because I think that's one way to build
18 the capacity of public health overall, but also to get our
19 data out into the public more quickly.

20 --o0o--

21 DR. WU: And just to thank our existing staff.
22 They amaze me every day, because they are the ones working
23 with the limited resources and managing to be very, very
24 productive.

25 And with that, I will turn it back to the Panel.

1 CHAIRPERSON SCHWARZMAN: Thank you so much,
2 Nerissa. We'll start with questions for Nerissa from the
3 Panel.

4 PANEL MEMBER MCKONE: Tom McKone. On budgets, I
5 mean, it is the core --

6 THE COURT REPORTER: Get closer to the mic.

7 MS. HOOVER: Get closer.

8 PANEL MEMBER MCKONE: Oh, sorry. A lot --
9 there's a lot of good ideas out there, but I was -- the
10 question I have is are there other opportunities that
11 might be pursued to sort of fill the rest of that gap or
12 even move it back up, for example. I know the CDC you're
13 working -- you can't say it's certain, but looking on the
14 horizon.

15 Are there other possibilities with foundations?
16 And I know I historically, there was money from other
17 State programs that had an interest. For example, one of
18 the things I'm thinking of there's a lot of efforts, both
19 in the state and other areas to sub -- do chemical
20 substitution. So it's like, I guess, the FREES study.
21 That's a very interesting study about substitution of
22 flame retardants.

23 But there's a lot of activity -- you know, I was
24 at a conference last week, and Meg was there also, on
25 alternatives. And DTSC -- sorry, the Department of Toxic

1 Substances Control is quite interested in pushing chemical
2 alternatives. I would think maybe they or somebody else
3 in the industry would be interested in the monitoring what
4 happens when you start pushing alternatives, more studies
5 of that type.

6 And I think there might be a source of funding
7 there, just because I think industries are interested too.
8 There might be an opportunity to enhance that with some
9 foundations or industry that are not only interested in
10 pushing chemical substitution, but also tracking whether
11 it makes a difference, whether certain chemicals are going
12 down in the blood. Just a thought.

13 DR. WU: Yeah. No, I think that's a good point.
14 And I think, it is very time intensive to respond to grant
15 solicitations, but it is something that we need to get a
16 little creative in doing and dedicate the time to do it,
17 so -- but your point is well taken.

18 CHAIRPERSON SCHWARZMAN: Yeah. Ulrike.

19 PANEL MEMBER LUDERER: Can you hear me now?

20 Closer.

21 All right. Sort of in the same -- similar vein,
22 I guess, but not exactly the same, you know,
23 collaborations what -- you mentioned we have -- people
24 have doctoral students, you know, who might be interested
25 in a project, and sort of along that same line,

1 collaborating with university researchers, you know,
2 who -- so then maybe they write the grant, so the Program
3 doesn't necessarily have to.

4 DR. WU: Um-hmm.

5 PANEL MEMBER LUDERER: But, you know, there could
6 be common, I think there are lots of common areas, you
7 know, that could be explored there.

8 DR. WU: Yeah, we actually are invited to
9 participate in collaborations like that quite a bit. One
10 of the things I alluded to is the difficulty in meeting a
11 project timeline. So there are times that we don't want
12 to commit to being able to deliver samples at a certain --
13 at a certain cost, because our future is a little bit
14 uncertain. Sometimes we have fluctuations in staff that
15 can't be projected, particularly with the -- you're
16 looking ahead in time with a grant. It's a little hard
17 for us to foresee how we might be able to meet them. We
18 don't -- we don't want to impact somebody else's grant by
19 not being able to fulfill the deliverables.

20 CHAIRPERSON SCHWARZMAN: Yeah. José. Please.

21 PANEL MEMBER SUÁREZ: Thank you very much for the
22 update. There was something that we talked in the last
23 meeting - and I'd like to bring it up again - is that
24 maybe you should consider having that fee-for-service
25 component for the lab. I know there are certain

1 restrictions as to how to do that.

2 DR. WU: Um-hmm.

3 PANEL MEMBER SUÁREZ: But I'm sure there's got to
4 be ways to do it, because many other public governmental
5 institutions do that, like CDC with Antonia Calafat. Of
6 course, they have a very well established fee-for-service.
7 And the NIH is big -- a very big funder for that.

8 DR. WU: Um-hmm.

9 PANEL MEMBER SUÁREZ: And some investigators,
10 such as myself, and many others in academia are constantly
11 looking for labs that can do very specialized work, such
12 as the ones that you're doing. And some of the issues
13 that we find is that when we want to do something, we have
14 an NIH grant, and this needs to happen at certain time
15 point.

16 DR. WU: Um-hmm.

17 PANEL MEMBER SUÁREZ: -- But if we go to say CDC,
18 it often takes them a year for them to actually be able to
19 look at our samples and then start working, because
20 they're working on NHANES or whatever else is happening.
21 So that could be something really to start tapping into.
22 You have the machines. Why not keep on using them. And a
23 portion of that really do it -- open it up for a
24 fee-for-service, which would include, of course, fees for
25 maintenance of the equipment.

1 DR. WU: Right.

2 PANEL MEMBER SUÁREZ: And with that, you have
3 somewhat of a steady income to have also the staff running
4 that. And I think what you're saying just also makes
5 sense to us to -- should you be considering reducing the
6 number of chemicals so you can really specialize a little
7 bit more on that and have personnel that's been more
8 attuned to those specific ones. But it's something that I
9 just wanted to bring attention yet again --

10 DR. WU: Sure.

11 PANEL MEMBER SUÁREZ: -- that it might be
12 something really worth thinking about.

13 DR. WU: And to be clear, we do charge
14 collaborators for our lab samples. I mean, we'd love to
15 be able to do everything as a public service, but there is
16 a fee associated with it usually. I think -- Jed, I don't
17 know if you want to address this as well, but I think we
18 have been trying to make sure that we are trying to cover
19 a little bit more of the costs in those fees for lab
20 services. But it is a challenge and we are a public
21 health lab as well, so we are -- we're not really set up
22 as a private lab. Our priority has to be running samples
23 that come into us as a public health lab.

24 CHAIRPERSON SCHWARZMAN: Veena.

25 PANEL MEMBER SINGLA: Thank you so much for that

1 update. It's really impressive what all the Program is
2 doing with the limited resources. Thank you for that.

3 The question I had is regarding the next report
4 to the Legislature, and what the timeline for that might
5 be just thinking about a new administration coming in, and
6 the importance of them understanding the work of the
7 Program, and what's -- making sure they're informed and
8 educated about that.

9 DR. WU: Sure. That is an excellent question.
10 Lege Report 4, which was due, I believe it was 2016, has
11 been in the works in the review process. And one of the
12 real sources of strength for the Program is our
13 collaboration across departments, but it is also one of
14 the challenges in having two separate review chains. So
15 it has gone through this multitude of review chains. And
16 I believe it is almost out the door. But it is, of
17 course, a little bit on the late side at this point.

18 Lege Report 5, which is a little more timely, has
19 made its way up to upper management within our chain. And
20 it is making its way apace and may lap its predecessor.
21 I'm not sure. So I really can't comment. We don't -- we
22 don't get many updates once it leaves our control.

23 But that is to say we are -- we get our reports
24 out. And it is hoped that that will be expedited as
25 biomonitoring becomes a little bit more visible as a

1 priority. And we hope the new administration recognizes
2 it is as such.

3 CHAIRPERSON SCHWARZMAN: Okay. Other questions
4 for Nerissa? If there aren't other Panel questions right
5 now, I'll open it up to public comment. Do we have any
6 comment from the web?

7 MR. BARTLETT: (Shakes head.)

8 CHAIRPERSON SCHWARZMAN: No comment from the web.
9 Any comments from the room, public comments from
10 the room?

11 And if not, then we'll just go on smoothly to
12 Panel discussion, and which we have time for now, even
13 though some of the questions have been discussion
14 oriented. We still have some time before our next
15 presentation. And I just wanted to flag maybe two
16 questions that I heard Nerissa ask. One was about lab
17 prioritizes -- prioritizing lab panels, and whether
18 there's any guidance that the Panel could provide about
19 how those priorities might be set.

20 And the other question I heard her ask was sort
21 of how the Program might further support public health
22 goals through other -- the activity of other researchers
23 or sort of divisions. And I'll just start off for a sec
24 with one thought that has been on my mind for a little
25 while, and I'm increasingly hearing calls for - I find it

1 an intriguing topic - is assessment of regulatory
2 effectiveness, because it's not something that has
3 typically done -- been done very much, partly because it's
4 not usually planned for at the time that regulations are
5 designed and passed, they don't -- so it's not
6 Biomonitoring California's oversight.

7 It's a -- you know, it's not how we've often
8 designed and implemented public health regulations, but we
9 have the opportunity through this program to figure out
10 what kinds of studies might help assess regulatory
11 effectiveness. And I know there's -- that the staff is
12 already thinking about that capacity with regard to diesel
13 exposures in some substudies of CARE and the East Bay
14 Diesel Project.

15 And Tom mentioned something that I know has also
16 been on staff's mind about paring with Safer Consumer
17 Products Program, when, you know, a priority product is
18 named and there's a call for alternatives assessments, and
19 ultimately regulatory response to alternatives
20 assessments, that there's the capacity within -- there's
21 potential at least for Biomonitoring California to supply
22 some data that informs the outcomes -- you know, what was
23 the outcome of that intervention.

24 I'm currently working on a project that I've
25 talked to some staff about, a research project on the

1 impact of Proposition 65, and we're looking for some
2 Biomonitoring California data that's sort of going to be
3 coming in over -- excuse me -- over the course of our
4 three-year study period, because perfluorinated substances
5 have -- are recent additions, and phthalates, and there
6 may be actually -- I have a grad student who's going to be
7 looking at this a little more closely, but what the time
8 overlap is. You know, do we have appropriate spans
9 from -- of biomonitoring data from before listing of Prop
10 65, and after listing.

11 And so what we've found in the process of looking
12 at those data - we're looking at NHANES data also - is
13 that it's such a patch work currently. We have so much --
14 we do so much sort of trying to string together disparate
15 pieces of data that are then not actually comparable,
16 because they weren't measured in the same population or in
17 the same way. And that a bit more intentional and
18 purposeful study design that's intended to study, evaluate
19 regulatory effectiveness would be wonderful. This is like
20 a wish list. I'm not suggesting that Biomonitoring
21 California has been dropping the ball, because I know you
22 don't have the resources to do this.

23 But if I were making my wish list, and I think
24 it's a public health priority, because we get some
25 feedback then about what interventions and what public

1 policies are -- actually have the intended effect, which
2 could ultimately make those interventions much more
3 efficient.

4 So it's a priority that I'm really interested in
5 exploring how we might develop in the event that funding
6 is available to do such things, or to think about as
7 studies that are launched, you know, or as CARE is
8 expanded, or continues how to direct resources, so that
9 they're also answering some of those questions for --
10 limited to what we can do under CARE by budgets.

11 Anyway, that's a priority I'm interested in.
12 Other thoughts from the Panel?

13 Tom.

14 PANEL MEMBER MCKONE: Now, I don't have to
15 struggle with turning on the microphone. I just take
16 yours. I want to build -- again, I'm very supportive of
17 the suggestion, and I think it's very powerful to monitor
18 regulatory effectiveness. I'd also like to suggest the
19 other side of the equation, which is when health
20 scientists are studying disease patterns, and we have a
21 lot of opportunity now to do a lot more medical
22 surveillance, a look at hospital records, and drill down,
23 the same thing there is if we had the biomonitoring data,
24 you can go the other way.

25 I mean -- and I agree with Meg, we want to go

1 from sort of product-use patterns to what's in the blood
2 or what's in urine and blood that we can see related to
3 patterns of use, and when we change the composition of
4 products, then what do we see?

5 But then the other side of the equation is can we
6 match up trends in health status, other than -- there's a
7 whole bunch of things where -- I know this is ongoing
8 research, but tying into it, helps the Program. I mean,
9 it helps the science, but it also helps the Program with
10 visibility and effectiveness when somebody goes, oh, well,
11 you know, we have these health studies and we're seeing
12 like dramatic increases in depression and certain age
13 groups.

14 Well, as somebody says, is there any hypothesis
15 we could test. Well, then you could go -- you could look
16 at a lot of the things, but it would be nice to have the
17 biomonitoring portfolio available for running in that
18 direction.

19 PANEL MEMBER LUDERER: Yeah, I agree, but -- with
20 what Meg and Tom said. And I think that being able to
21 assess interventions and regulatory impacts is really
22 important. And I think if we're getting back to kind of
23 the question about what chemicals are important to
24 maintain ability to monitor, if you're going to be
25 assessing impacts let's say of a regulation, obviously,

1 it's important to maintain older panels of say things that
2 are being phased out.

3 But then also, I think, the flip side of that,
4 which is something that the Panel has been concerned
5 about, I think, since the Program started, is to also then
6 be able to monitor the replacements, because we're
7 obviously always very worried about regrettable
8 substitutions that happen all too often.

9 So, obviously -- which I guess what I'm getting
10 at is that decreasing the things that are biomonitored
11 is -- you know, that's a very -- it's a very difficult --
12 those are really difficult choices to make. Now, ideally,
13 you'd like to be able to keep monitoring a wide variety of
14 things, and be able to repeatedly -- you know, to follow
15 the patterns and populations, which is, I guess, really an
16 argument for the Program needs more funding, so that it
17 can continue to main all these -- maintain these panels.

18 CHAIRPERSON SCHWARZMAN: Other comments.

19 Eunha.

20 PANEL MEMBER HOH: This is the first meeting
21 so -- but I guess my thought was, you know, I'm
22 actually -- I'm running a lab and analyzing quite a
23 chemicals. And I'm pretty much sympathetic to the great
24 under resource. The more and more the -- you know, the
25 instruments are more advanced, and then the humans --

1 actually, the workers can maintain the instruments is
2 harder and harder, you know, which I think that the
3 management has to understand that point.

4 So in like 10 years ago, 20 years ago when I was
5 PT student, I was able to fix the instrument. And then,
6 you know, the running the instrument -- things. But now
7 the instruments are so much advanced, which means we can
8 detect better, and detect much lower levels, and then can
9 provide a lot more information. But the flip side that we
10 can't really fix the instruments, you know.

11 I mean, so there's something that I think we have
12 to understand that point, you know, to carry out the
13 project. And I -- there are several things that probably
14 are very interesting thing is always that why we don't
15 collect the data together with the health data together,
16 you know, kind of working with the more medical people out
17 there. But that's something that I was thinking, but
18 something -- there may be someday that maybe the
19 Department of Public Health could probably try.

20 CHAIRPERSON SCHWARZMAN: Veena.

21 PANEL MEMBER SINGLA: I definitely agree with the
22 importance of assessing regulatory effectiveness and
23 understanding the effectiveness of interventions --

24 MS. HOOVER: A little closer Veena.

25 PANEL MEMBER SINGLA: Um-hmm -- understanding the

1 effectiveness of interventions.

2 Along those lines, I had a couple thoughts. One
3 is because information on PFAS exposures is already
4 planned as part of the CARE biomonitoring, if -- to
5 coordinate with Safer Consumers Products on potential
6 information that could be useful down the line as they're
7 planning their actions on PFAS chemicals, I think there's
8 already really good dialogue there. But just to
9 understand if there's any additional information or
10 different kinds of information that could be added on
11 there, that would be useful to assess the effectiveness of
12 their actions, you know, on a longer timeline.

13 And similarly, on flame retardant chemicals,
14 since California did pass legislation banning flame
15 retardants from a few classes of consumer products, to
16 think about if there is any sort of study design that
17 could be started now to assess the effectiveness of that
18 policy, when -- once it is implemented and takes effect.

19 And then thinking about -- I agree with the
20 comments that were made that it's a very -- it's
21 challenging to think about, you know, reducing the number
22 of panels or streamlining, because it's all very important
23 information.

24 But I wonder to what extent, with the information
25 that CDC collects through NHANES on -- on Californians, if

1 some of that information could -- could help -- could feed
2 into your analyses, and could help to streamline some of
3 the panels that you may be doing in common with CDC. I
4 don't know, but I wonder if there could be some
5 streamlining there.

6 CHAIRPERSON SCHWARZMAN: Just to maybe work with
7 that idea a little bit and a question for staff who has a
8 more complex relationship with CDC than I do, and know
9 more about the NHANES data, but -- so my understanding of
10 that NHANES is essentially unwilling to release
11 state-specific data. Because they sample it at so few
12 locations, they're getting data that's representative of
13 the U.S. population but not exactly representative of the
14 California population, and so -- and they sample so few
15 areas that they worry about confidentiality, if they
16 release state-specific data.

17 We are doing something in our Prop 65 research
18 project, where apparently you can make a request of the
19 NHANES to study -- to look at data -- biomonitoring data
20 from an area that's specifically affected by a particular
21 policy. And so we're requesting data from areas that are
22 affected by Prop 65, which we hope will be a way of
23 accessing California-specific data.

24 But that's sort of a -- that's a workaround that
25 we'll see how effective it is. But, of course, that's

1 a -- it's not necessarily representative of the California
2 population. It's meant to be representative of the U.S.
3 population.

4 Anyway, I just wanted to kind of put that out
5 there to hear a little bit more from staff who I'm sure
6 have worked with this idea about -- you know, one of the
7 things I heard you saying maybe, Veena, is there a way
8 that California can get more bang for our buck by not
9 duplicating NHANES work essentially?

10 And I -- I'd just be curious if you have thoughts
11 about whether that's a possibility or do these issues
12 stand in the way of that?

13 I mean, one of the things that biomonitoring can
14 do -- in California can do is provide more granular
15 information and it's one of the reasons -- things we hoped
16 it would do is provide more granular state-specific,
17 community-specific information that NHANES possibly can.

18 But maybe Veena's question still stands about are
19 there ways that NHANES can take some of the pressure off
20 of -- no. Sara just says no.

21 (Laughter.)

22 DR. WU: Yeah. We have tried in the past to
23 access state-specific data and have not been successful.
24 So I'll be really curious to see if you were effective.

25 (Laughter.)

1 CHAIRPERSON SCHWARZMAN: Okay. Yeah. Jennifer
2 may have a reflection on it.

3 DR. MANN: Hi. I'm Jennifer Mann. I'm with
4 Biomonitoring California.

5 MS. HOOVER: Closer. Closer.

6 DR. MANN: Jennifer Mann, Biomonitoring
7 California.

8 I do want to say that there are reports, but
9 they're really not helpful for biomonitoring from CDC,
10 both about Los Angeles and California, because apparently
11 the Los Angeles area is pretty much part of every wave of
12 NHANES, two-year wave. And so they release, I believe,
13 it's eight-year reports for both L.A. and California. You
14 can't seem to request those data. It doesn't -- it's not
15 clear that you can.

16 And the reports are not about the kind of data
17 we're interested in. They're things like blood pressure
18 and those kinds of things that they're reporting on,
19 partly maybe because of there's -- they can analyze those
20 things, because they sample them on everybody.

21 So there's that. And it's a little bit
22 frustrating when you -- it's a little bit frustrating,
23 because it's tantalizing. You know it's there, but you
24 can quite get it. But Meg is right, they're not
25 interpretable the way we would want to interpret them.

1 I will say that we always -- that as far as --
2 with a few exceptions, we are looking at things that
3 NHANES also studies, so that we have a context to know
4 whether or not we're seeing something different from
5 national data. There are PFASs that we added that are not
6 measured by CDC, so there are areas in which we are -- we
7 do deviate, but it's a little bit hard to, in my mind,
8 completely divorce ourselves from CDC, because they do
9 provide that context.

10 CHAIRPERSON SCHWARZMAN: I notice that's one of
11 the things that's in report resulting -- result
12 reporting -- excuse me -- packets is where do these
13 findings stand relative to the national averages reported
14 through NHANES, which I think is really relevant and
15 helpful piece of information.

16 MS. HOOVER: This is Sara Hoover, OEHHA. I just
17 wanted to add that actually the law mandates that we
18 measure all designated chemicals which are from CDC. So
19 the foundation of our program is CDC, and that's part of
20 our charge. So interesting idea, but I think not really
21 feasible for various reasons that have been cited.

22 In terms of just, you know, we also put up kind
23 of our wish list in terms of what we might do with more
24 funding, you could throw in a few comments about that.
25 And then also, just to foreshadow a little bit of SGP

1 topics for 2019. We don't have much time for discussion,
2 so one of the things I'm putting out there today is the
3 possibility of doing more chemical selection in 2019.
4 This is obviously aspirational, because we don't
5 necessarily have, you know, the laboratory capacity to
6 fulfill that.

7 But I'd also like anybody to think about
8 emerging -- you know, specific emerging chemicals of
9 interest that are not already covered by our very clever
10 class approaches that are already on the designated
11 chemical list. So just something to think about. If
12 anyone has ideas, feel free to chime in.

13 CHAIRPERSON SCHWARZMAN: Any additional Panel
14 comments?

15 Yeah, Oliver.

16 PANEL MEMBER FIEHN: I see here on the wish list
17 support for non-targeted screening. As I feel I'm one of
18 the experts in the area, I would like to encourage the
19 laboratories to engage with NIH programs in this area, the
20 CHEAR and a number of other programs very active in this
21 area. So instead of trying to reinvent the wheels, you
22 know, there should be active -- very active interaction
23 between the State laboratories and laboratories who
24 conduct such kinds of non-targeted screening for
25 environmental pollutants.

1 There are also, in California, quite a number of
2 conferences and workshops that engage in this area. For
3 example, now in November in San Francisco, the ASMS
4 workshop on non-targeted screening, compound
5 identification with people from Europe who come into the
6 city who focus on environmental analysis for a long time.

7 So I always had a bit of feeling that this type
8 of interaction was not happening or maybe not happening
9 enough. And, you know, I cannot say if that is also the
10 same for targeted screenings. But in my own laboratory,
11 we have massively improved the throughput, even for
12 targeted screening through looking at our procedures,
13 seeing what type of new software can be used, what type of
14 new sample preparation methods can be used and
15 implemented, what other people have published to reduce
16 time, and, you know, for both the sample preparation but
17 also for analysis time.

18 So there is quite a bit of room for improvement,
19 even for older assays. You know, if there is, as you say,
20 the strengths and the will, and maybe also graduate
21 students. As you have said, you know, graduate students
22 are welcome. Well, it goes both ways. You know, actively
23 seeking out, you know, expertise from laboratories within
24 and outside of California, as well as, you know,
25 receiving.

1 PANEL MEMBER CRANOR: Carl Cranor. I want to
2 follow up with the non-targeted screening for a moment.
3 One thing the biomonitoring has well done is targeted
4 screening where you really suspect something is going on
5 in a subpopulation and you pursue that.

6 But there may be things that we don't -- we don't
7 know about that have emerged. And I take it that falls
8 under non-targeted screening. So what are the
9 possibilities for doing non-targeted screening and can the
10 Program align -- ally itself with other agencies that may
11 have money that CDC doesn't have?

12 And I could talk -- not now, but I could talk
13 about some agencies that actually may have a fair amount
14 of money and open up some possibilities there.

15 So if you get a mysterious compound, and you
16 don't know what to make of it. There are libraries around
17 that have that information. And it would give you a clue
18 as to maybe new things that are on the horizon. Just a
19 query and what the possibilities are.

20 CHAIRPERSON SCHWARZMAN: Does staff want to say
21 anything about that or we'll move on.

22 I was going to take off a moment on that idea
23 just to mention -- I think you're probably already aware
24 of Martyn Smith's lab's work on the exposome. And I
25 mentioned it now just because we were part of a larger

1 research collaboration in which that lab was doing some
2 work on sort of total estrogenicity of serum samples and
3 then trying to look back at what -- do some non-targeted
4 screening comparing the women with higher. So you take
5 the blood or serum from the women, you test them against
6 in vitro screens for estrogenic action, and you sort them
7 into higher and lower total estrogenic activity in the
8 blood or serum. And then you do non-targeted screening to
9 compare what's the difference between the chemicals in the
10 blood of the women who have higher estrogenic activity in
11 vitro compared to the ones who have lower.

12 Anyway, that's -- I think that probably falls
13 more into the area of sort of exploratory and new method
14 development. And I don't know that it's ready for a, you
15 know, complete overlap with Biomonitoring California
16 studies, but I do know that they have had some difficulty
17 identifying some of the compounds that might account for
18 those differences in estrogenic activity.

19 And so I mention it not as like, oh, this is
20 manage you could do right now, but maybe to put it on the
21 radar as a conversation that might be helpful to hear
22 what's -- where they are in that -- last I knew about it
23 was February -- that my update is from February.

24 Eunha.

25 PANEL MEMBER HOH: Yes.

1 I've been -- yes, I've been working on the
2 non-targeted analysis as well, but not necessarily human
3 serums or human samples yet. So -- okay. So -- but it's
4 definitely -- I think it's worth really pursuing,
5 because -- but could be different metrics. You know, not
6 necessarily -- the goal is like, oh, if you -- we want to
7 know like what chemicals are we exposed, which we didn't
8 know before, and then selection of the samples could be
9 very important.

10 Like, maybe the blood samples is not maybe enough
11 or urine samples is not enough, but something like more
12 dust samples, or some -- like a more exposure related,
13 that subjects could be the good parts of it. And then
14 also the study design is very important, so that, you
15 know, how you're going to prioritize that. I mean, Meg
16 mentioned about that kind of study, that estrogenicity
17 positive and negative kind of stuff.

18 But it's more even like what -- how you're going
19 to prioritize it, and then focus on what chemicals. If
20 you found some picks, which were frequently detected, very
21 abundant in a certain population, you know, and then
22 you're going to work on the identification, because
23 identification it's the big challenge.

24 But there are a lot of improvements going on in
25 the libraries and everything.

1 CHAIRPERSON SCHWARZMAN: Veena, do you have a
2 comment?

3 PANEL MEMBER SINGLA: I wanted to switch gears a
4 little bit to comment on another one of the goals on the
5 list here, which is the capacity to respond to emergency
6 events. I think that is of really high interest and
7 relevance. And I wondered if the current IRB allows that
8 capacity at the moment, because I know that process can be
9 quite lengthy, and that that might be something to start
10 thinking about now to kind of get that process started and
11 go through it.

12 It's on my mind. I was just at the Society for
13 Environmental Toxicology and Chemistry, SETAC, meeting up
14 in Sacramento and heard a really cool talk from a group
15 that did some biomonitoring after -- sorry, excuse me, not
16 biomonitoring. They used the silicon wrist bands after
17 Hurricane Harvey in Houston to look at chemical exposures.

18 And their process for getting the IRB that could
19 be turned around in 48 hours took them over a year and a
20 half, I believe. So just wanted to raise that as a
21 possibility.

22 CHAIRPERSON SCHWARZMAN: Do you want to respond
23 Nerissa?

24 DR. WU: So last year when we were working with
25 the San Francisco Firefighters Cancer Prevention Group, we

1 were able to amend a UC Berkeley IRB protocol to get out
2 into the field within, I want to say, six weeks, by which
3 time a lot of the non-persistent chemicals were gone. So
4 our intention is to create a protocol, and get
5 questionnaires written, and have our -- everything in
6 order, and get an IRB approval in case of -- I mean, there
7 will be wildfires coming up. That is sort of our new
8 reality.

9 So that is one of the priority items for this
10 collaboration that has sprung up between the firefighters,
11 UC Berkeley, and Commonweal and our group. It's a matter
12 of prioritization. So we are -- that is something that we
13 would -- really would like to have ready for next year's
14 wildfire season.

15 CHAIRPERSON SCHWARZMAN: José had a comment.

16 PANEL MEMBER SUÁREZ: Oh. Thank you. So I have
17 a question kind of like backtracking a little bit. You
18 mentioned a potential need to reduce the number of
19 chemicals that may need to be biomonitored. My
20 understanding is that that is more of an economic reason,
21 right, is because that the budgets are reducing, so if
22 that's correct?

23 Have you done the exercise of figuring out how
24 much money you need to cut and how does that translate
25 into how much potential classes of chemicals would need to

1 be reduced for your budgets to work?

2 DR. WALDMAN: Hi. My name is Jed Waldman. I'm
3 the Environmental Health Laboratory Chief here. So the
4 Program has two labs, one at DTSC and one here at the
5 Health Department. And the Biomonitoring Program under
6 Jianwen She is my laboratory. So that's a provocative
7 question, because we are often using resources fluidly,
8 because the baseline of -- the baseline maintenance of the
9 laboratory is beyond the scope of this Program and it's
10 funding.

11 So it's -- we're always doing more than we can on
12 paper is really the best answer I can give you, because we
13 have other programs that are rising and falling, and
14 instruments need to be maintained or our CLIA
15 certification is -- has to be maintained. So the answer
16 of predicting what we can do is always more dire. So I
17 don't know if that's a hopeful answer that we're -- if you
18 looked at it on dollars and sense, we wouldn't be able to
19 do much of what we are actually doing, especially -- the
20 last thing I'll say is the uncertainty is probably more
21 damaging than the cuts, because if we actually got what we
22 expected at all times, we could plan ahead, but things
23 change, both up and down.

24 PANEL MEMBER SUÁREZ: I mean that could be
25 something that at least for us in the scientific end of

1 this Panel we would benefit from to start thinking about
2 certain things. If you tell us, well, we may need to cut
3 five different classes of chemicals, which ones should
4 those be, or which ones should be replaced with some of
5 the newer ones that we started to discuss. I think that
6 would be something that would be very useful to do.

7 DR. WALDMAN: What I will say is that for the
8 CARE studies, we have ratcheted back to sort of a minimal
9 set of compounds. And for each cycle we will be adding --
10 you know, for example, the phenols are being tested on a
11 subset, and we'll -- presumably when we bring up other
12 methods, we'll be able to sort of cycle back, so we're
13 committing to is a -- is a -- is the baseline. And as our
14 ability, you know, increases then we can cycle back and
15 then add a panel to our archive samples.

16 PANEL MEMBER SUÁREZ: So do you think it makes
17 sense to start thinking about it in those terms as to --
18 for next year's budget, considering that this is a number
19 of different chemicals that we can afford, and for some of
20 the other classes maybe identify how many should be
21 reduced? Do you think that's something that would be
22 helpful?

23 MS. HOOVER: Hi. Sara Hoover, OEHHA. We're
24 going to move on to the next item, but I'll quickly say we
25 plan years in advance, so we've done that exercise. And

1 as Jed was just alluding to, that exact prioritization and
2 what we're capable of doing informed what we chose for
3 CARE. So that's always embedded in all of our planning.

4 With that, let's...

5 CHAIRPERSON SCHWARZMAN: Thank you all for your
6 thoughts and contributions. We're going to move on to the
7 next presentation. And thank you, Nerissa, as always for
8 an informative and inspiring also update of what the
9 Program is doing with limited resources.

10 Our next presentation is going to be Jennifer
11 Mann and Lauren Baehner -- did I say that correctly?

12 MS. BAEHNER: Yes.

13 CHAIRPERSON SCHWARZMAN: Great -- who are
14 presenting on biomonitoring results for metals from BEST
15 and ACE as I mentioned earlier. Jennifer and Lauren are
16 both research scientists in Nerissa's group here at CDPH.

17 (Thereupon an overhead presentation was
18 presented as follows.)

19 DR. MANN: Hi. I'm Jennifer Mann, and I'm --
20 today I'm going to be talking about what we found when we
21 analyzed urinary and blood metals in the Biomonitoring
22 Exposures Study.

23 --o0o--

24 DR. MANN: I'm just trying to figure out -- oh, I
25 -- that was not the right thing to hit.

1 Okay. Starting off well. Okay.

2 Thank you.

3 The Biomonitoring Exposure Studies, as you'll
4 learn in a minute, were done quite awhile ago, but -- and
5 the data have been posted to the web. And I believe this
6 is the first presentation of results from these studies.
7 There will be more coming up in future SGP meetings.

8 So the Biomonitoring Exposure Study was a
9 collaboration with Northern California Kaiser Permanente
10 Division of Research and Biomonitoring California. And it
11 was a sample of adult Kaiser Permanente members from the
12 Central Valley. And you can see the seven counties that
13 people were from here.

14 And so the way that it worked was members were
15 stratified by gender, two different age groups, 18 to 55
16 versus older, four race/ethnicity groups, and also
17 urbanicity. And then they were randomly selected from
18 each of these categories. And the idea was that there
19 would be a balance. So there would be an even number of
20 each race/ethnicity, each gender, each of the two age
21 groups.

22 So the pilot, which was done in 2011 and 2012 had
23 112 participants. And that yielded 110 blood samples and
24 108 urine samples. After the pilot was over they took a
25 good look at the data and what happened, and -- be focused

1 a bit. And they decided to oversample Hispanics and
2 Asian-Pacific Islanders. And they also had an interest in
3 looking at whether or not language spoken at home among
4 Hispanics were any relationship to concentrations of the
5 different things that were being biomonitored. And the
6 list is really long for BEST. I'm talking about metals
7 today, but there -- this was back in the day where a lot
8 of things were looked at in everybody.

9 There were 341 people who participated in the
10 expanded phase of BEST that yielded 315 blood samples.
11 From those blood samples, 218 people were selected to have
12 their urine analyzed. And it was done in a way to
13 maintain this balance across race/ethnicity.

14 --o0o--

15 DR. MANN: So given what I just said, it's not
16 surprising that there were a lot differences between the
17 participants characteristics in Pilot and Expanded BEST.
18 So we know that there's going to be a difference in
19 race/ethnicity proportion. And you can see here that in
20 Expanded BEST, 33 percent of the participants were
21 Asian-Pacific Islanders, and 41 percent were Hispanic.

22 Given the earlier goal of looking at trying to
23 get half of those Hispanics having Spanish as language
24 preference and half as English is the Spanish preference,
25 it's not surprising that 17 percent overall of

1 participants preferred Spanish language in Expanded BEST,
2 which is really different than the pilot.

3 Unanticipated, but explainable, are the
4 differences we see in age. Expanded participants were
5 younger by about eight years, and about a four-fold
6 increase in the number participants who came -- who had a
7 rural residence. Remember, the goal was about 50/50, so
8 they were much more able to achieve that goal in Expanded
9 BEST. And this was partly due to logistical differences
10 between the two phases.

11 --o0o--

12 DR. MANN: So there's going to be two parts to my
13 talk. And the first part, I'm going to be talking about
14 the geometric mean levels of metals in pilot and expanded
15 phases of BEST, and how they compare with data from
16 NHANES. And in the second part, I'm going to be
17 discussing predictors of urinary and blood metal
18 concentrations in Expanded BEST.

19 --o0o--

20 DR. MANN: So here, we see the metals that were
21 analyzed in both Pilot and Expanded BEST. They were on --
22 urinary metals were arsenic, cadmium, and mercury. Blood
23 metals were cadmium, lead, manganese, and mercury. And
24 for those of you who are wondering why cadmium and mercury
25 are both measured in urine and blood, urinary cadmium

1 reflects longer-term exposure.

2 Whereas, cadmium in the blood reflects more
3 recent exposure. For mercury, urinary mercury -- blood
4 mercury is looking at mercury that is methylated, whereas
5 urinary mercury is not.

6 --o0o--

7 DR. MANN: In Expanded Best, We added all of
8 these different urinary metals to our Panel. And this is
9 the first time we had an expanded urinary panel. And we
10 added cobalt, manganese, molybdenum, thallium, Tungsten,
11 and uranium.

12 Of these, several of these new metals are --
13 continue to be measured. And in CARE, we are measuring
14 cobalt, manganese, molybdenum, and uranium, as well as
15 some other metals that you don't see on this list.

16 --o0o--

17 DR. MANN: I'm going to go through a series of
18 seven slides somewhat quickly, so let me spend a little
19 bit more time on this first slide, so you understand
20 what's going on here.

21 These are geometric mean and 95 percent
22 confidence intervals for each metal that you see. Here we
23 have it for arsenic. The very first geometric mean that
24 you see is for Pilot BEST, which was conducted between
25 2011 and '12. And that corresponds nicely with NHANES

1 data from 2011 and '12. Expanded BEST was done in 2013.
2 And so we compare it to NHANES data from 2013 to 2014.
3 And here you can see that for arsenic, levels were much
4 higher in both phases of BEST than they were in NHANES.
5 They were 44 and 47 percent higher respectively.

6 Sorry.

7 --o0o--

8 DR. MANN: Here, we have the results for urinary
9 cadmium. You can see again that cadmium levels were
10 higher for BEST, significantly higher than in
11 corresponding NHANES data. And here, they're 37 percent
12 and 33 percent higher than in the national data.

13 --o0o--

14 DR. MANN: We see the opposite pattern for
15 mercury -- for urinary mercury. Levels were much lower in
16 BEST.

17 --o0o--

18 DR. MANN: And for blood cadmium, levels were
19 lower as well compared to NHANES. And the difference for
20 the pilot phase was statistically significant.

21 --o0o--

22 DR. MANN: Then here for blood lead, we see that
23 levels were similar to national data for pilot phase, but
24 they were significantly lower in the Expanded phase.

25 --o0o--

1 DR. MANN: Mercury, there were no differences
2 with national data.

3 --o0o--

4 DR. MANN: And manganese had lower --
5 significantly lower levels in the Pilot phase.

6 --o0o--

7 DR. MANN: Now, I'm going to go to the second
8 part of my talk, which -- where I'll be looking at
9 prediction models for urinary and blood metals from
10 Expanded BEST. So this is using information we had from
11 our exposure assessment questionnaire, and demographic
12 information on our participants and seeing how it predicts
13 levels of lead.

14 --o0o--

15 DR. MANN: Am I not close enough?

16 CHAIRPERSON SCHWARZMAN: Oh, we're going to
17 interrupt for a quick technical question.

18 PANEL MEMBER MCKONE: Can you go back to those
19 slides. I just had a real quick question.

20 DR. MANN: Which slide?

21 PANEL MEMBER MCKONE: The one showing the ranges.
22 Just go back one.

23 DR. MANN: These plots.

24 PANEL MEMBER MCKONE: So when you shows a
25 range -- okay. When you -- when you have that line, is

1 that the variance among the samples or is that the
2 variance about the mean of sampling uncertainty?

3 DR. MANN: It's the 95 percent confidence level.

4 PANEL MEMBER MCKONE: That is the 95, okay.

5 CHAIRPERSON SCHWARZMAN: Ninety-five percent
6 confidence interval on the mean or --

7 DR. MANN: Yeah. Yes.

8 CHAIRPERSON SCHWARZMAN: On the geometric mean.

9 DR. MANN: On the geometric mean, right.

10 CHAIRPERSON SCHWARZMAN: Thanks.

11 DR. MANN: Based on the variance so, yeah.

12 PANEL MEMBER MCKONE: Yeah, I got it.

13 DR. MANN: Yeah. Sorry, I didn't explain that
14 more thoroughly. I'm glad you asked, because that
15 geometric mean and 95 percent confidence interval appear
16 later as well.

17 --o0o--

18 DR. MANN: So the first slide I want to talk
19 about in terms of predictors are -- this is the familiar
20 list of urine metals that we -- I just discussed that we
21 looked at in Expanded BEST. The detection frequency was
22 pretty -- was very good actually for most of the urine
23 metals, above 90 percent, except with two exceptions.
24 Uranium had a detection frequency of 86 percent and
25 manganese had a detection frequency that was only 60

1 percent. That was too low to calculate a geometric mean.

2 So the interesting thing about this slide is in
3 the next two columns -- so the column two is looking at --
4 or, I guess, that's column three is looking at geometric
5 means in Expanded Best. And then next to that, you see
6 the geometric means for NHANES 2013 to '14. I don't have
7 confidence intervals here, but where you see a red star,
8 the differences are statistically significant. So it's
9 interesting here is that in every case there's a
10 statistically significant differences.

11 And this is something we don't often see when we
12 compare data to NHANES, but we're seeing it here. So
13 arsenic, cadmium, molybdenum, thallium, tungsten, and
14 uranium were all significantly higher in the BEST -- in
15 the Expanded Best Study, and cobalt and mercury were
16 significantly lower.

17 --o0o--

18 DR. MANN: For blood metals, we didn't see
19 anything so dramatic. Lead was significantly lower in
20 Expanded best compared to NHANES, and the others were not
21 significantly different.

22 So now I'm going to shift over and talk about a
23 little bit how these prediction models were built. We
24 considered the same variables in every model for -- so for
25 every metal we were looking at the same variables, and

1 they were sex, 10-year age category, race/ethnicity, and
2 that was Asian-Pacific Islander, Hispanic and African-
3 Americans, where white was the reference group.

4 We had several questions about diet. And here we
5 looked at days per week consumed of grains, fresh and
6 canned fish, vegetables, and fruit. We also looked at the
7 impact of time in the United -- that you lived in the
8 United States, educational level, whether you were a
9 current, former, or never smoker, and whether or not you
10 had a rural residence. I'm not going to be looking at the
11 results for all of these things. I'm going to be
12 highlighting results for certain predictors.

13 --o0o--

14 DR. MANN: Our statistical analysis was
15 regressions, where we were trying to predict the log of
16 the metal -- changes in the log of the metal. And our
17 effect estimates are expressed here as a percent increase
18 or decrease relative to a reference group, in the case of
19 categorical variables. And in the case of the diet
20 variables, looking at the change in concentration of the
21 metal with a one-day per week increase in consuming the
22 food. And we also looked at tests for trend, for age
23 group, smoking status, time in the United States, and
24 educational level.

25 --o0o--

1 DR. MANN: This slide shows the explanatory power
2 that we found for the models measured with R^2 and
3 expressed as percent. And you can see for the most part
4 for the urine metals, the explanatory power of the models
5 was pretty low. It's disappointing, but it's also not
6 surprising, because our questionnaire has to cover
7 exposures to a variety of chemicals. And we have to
8 really scope our questions down, so the questionnaires
9 don't become too long.

10 But we actually received very good explanatory
11 power for creatinine-adjusted cadmium, where 52 percent of
12 the variation in that metal was explained by the model.
13 We did better when we looked at blood metals, at least
14 double, ranging from 20 to 42 percent of the variation in
15 those metals was explained, and we did best with blood
16 lead.

17 --o0o--

18 DR. MANN: Now, I'm going to talk about certain
19 predictors that we looked at in isolation. And I want to
20 remind you when we're looking at these things, they're
21 adjusted for everything else in the model. So now here,
22 this study is looking at race/ethnicity, and we're seeing
23 the percent difference relative to the reference group,
24 which was non-Hispanic whites, for the three different
25 other categories Asian/Pacific Islanders,

1 African-Americans, and Hispanics. And these results are
2 adjusted for sex, age group, education level, time in use
3 in the U.S., and smoking status, and actually rural
4 residence, which I forgot to put on here.

5 And to explain this -- with the first row, how to
6 interpret these coefficients pretty clearly, what that
7 first cell of -- what we see here is that Asian/Pacific
8 Islanders had a blood mercury concentration that was 63
9 percent higher than what was seen in non-Hispanic whites.
10 And whereas African-Americans had blood mercury
11 concentrations that were 14 percent lower.

12 So for urinary mercury we see increases in all
13 three groups relative to non-Hispanic whites, and almost
14 double in African-Americans relative to non-Hispanic
15 whites. For total arsenic, we see that Asian-Pacific
16 Islanders and African-Americans were higher. Whereas, for
17 molybdenum and tungsten, Hispanics were the one group that
18 were higher -- that were significantly higher.

19 --o0o--

20 DR. MANN: I'm going to talk about the diet
21 variables. What we asked -- we asked questions about how
22 often -- how many days per week you ate these foods? And
23 here you -- you're going to see -- so you were allowed to
24 say zero, if you didn't eat the food at all, one, and then
25 up to seven. And this effect is for a one-day increase in

1 consumption of that food per week.

2 So for -- there was an association of higher
3 levels of blood mercury, if you consumed fresh fish. For
4 each day -- additional day per week that you consumed
5 that -- that item, the blood mercury concentrations went
6 up 23 percent. So that's how you interpret these effect
7 estimates.

8 Blood mercury was associated with increased
9 consumption of fresh fish and canned fish, not
10 surprisingly.

11 For arsenic we only found a relationship with
12 fresh fish, not canned fish. We found some other
13 associations that are a little bit hard to interpret. So
14 we'll find out what we see in future studies. But for
15 thallium, fish was associated with reduced concentrations
16 consumption of canned fish. Whereas, fresh fruit was
17 associated with increased consumption of -- sorry. Fresh
18 fruit consumption frequency was associated with increased
19 levels of thallium. And canned fruit consumption was
20 associated with increased levels of cobalt.

21 So everything -- so grains, fresh and canned
22 vegetables and -- grains and fresh and canned vegetables
23 were not associated with increased levels of any of the
24 metals in Expanded BEST. And it's important to note that
25 the BEST Study did not include a specific question about

1 rice consumption. It asked about grains.

2 --o0o--

3 DR. MANN: Another variable that we looked at was
4 generation and time in the U.S. The reference group here
5 was people who were born in the United States. If you
6 weren't born in the United States, participants were
7 categorized by the number of years they lived here with
8 those people living here less than or equal to ten years
9 being in the bottom category. And those people living
10 here up to 25 years being in the top of that category.

11 The only metal that was associated with time in
12 the U.S. was uranium. Uranium levels were associated --
13 uranium levels decreased with time in the United States.

14 --o0o--

15 DR. MANN: And finally, I want to look at urban
16 or rural address. This study was one opportunity to
17 really look at the differences between rural and urban
18 exposures. We're not sure we're going to be able to
19 effectively look at this in CARE, because of logistical
20 issues, although we're interested in it.

21 And so I took a look at the impact of this -- to
22 look at what we saw with patterns of rural or urban
23 address. The study used a census definition called UR10.
24 And it's based on population density, and land-use
25 designations to define an area as urban.

1 And then anything is not -- that is not defined
2 as urban is automatically rural. And this may or may not
3 be a proxy for private well water use, which we did not
4 specifically ask about in BEST. So participants from
5 rural areas were higher in molybdenum, thallium, uranium,
6 and blood manganese.

7 One of -- something that you may not see on this
8 list that you may find surprising is arsenic. Arsenic did
9 not come up.

10 --o0o--

11 DR. MANN: So, in summary, many of the metals
12 added to the urinary panel for Expanded BEST were higher
13 than in NHANES. And the significant concentrations for
14 urine metals was significant across the board, where we
15 could calculate a geometric mean. There were elevated
16 metal concentrations in non-white groups even after
17 adjustment for all of the other predictors. And
18 Asian/Pacific Islanders became a special group of interest
19 while we were doing this study. And it's one motivation
20 for the Asian/Pacific Islander Community Exposures, or
21 ACE, Project, which Lauren -- you'll hear about from
22 Lauren in a minute.

23 We also saw elevated levels of urinary
24 molybdenum, thallium, uranium and blood manganese in rural
25 participants. And the reason for the higher levels still

1 need to be explored.

2 --o0o--

3 DR. MANN: So we have a lot of works in progress
4 coming up for BEST. There are two journal articles that
5 are being completed or worked on right now. One based on
6 what I presented today that looks at predictors of urinary
7 in blood metals, and another on perfluorinated compounds.
8 And we're also -- we also have a student project coming
9 up. It's going to be looking at diet, especially
10 frequency of eating organic food, and levels of pesticides
11 in the Expanded BEST participants.

12 --o0o--

13 DR. MANN: I want to thank Kaiser Permanente
14 Division of Research Northern California. Stephen Van Den
15 Eeden was the PI over there. Jun Shan helped with
16 analysis, and Amethyst Leimpeter was the -- was very
17 active in actually conducting the study.

18 I also want to thank all Biomonitoring California
19 staff who contributed to Pilot and Expanded BEST.

20 CHAIRPERSON SCHWARZMAN: Thank you so much for
21 that.

22 If you'll stay up for a sec, we have a few
23 minutes for Panel and audience questions. So we'll have
24 discussion after. This is just sort of for clarifying
25 questions for Jennifer.

1 Yes.

2 PANEL MEMBER McKONE: Yeah, I want to go back to
3 follow up a little bit more about the dispersion of the
4 data.

5 First of all, I don't -- I mean, it's definitely
6 correct and important to look at the geometric mean.

7 DR. MANN: The plots.

8 PANEL MEMBER McKONE: Yeah, the plots. So the
9 geometric mean is certainly an important statistic for
10 comparison, because, you know, you're looking at the
11 center of a population.

12 DR. MANN: Right.

13 PANEL MEMBER McKONE: I think the only thing I'd
14 be interested in hearing about or seeing perhaps is a
15 little bit more about how there's dispersion. I mean is
16 this -- are most of these fairly neatly log normal or
17 you --

18 DR. MANN: They're all log normal. They're all
19 transformed as log normal, and then expressed as geometric
20 means, which is the exponentiation of that.

21 PANEL MEMBER McKONE: Because you can get a
22 geometric mean, and then if you look closely, you find out
23 you actually have a distribution.

24 DR. MANN: No.

25 PANEL MEMBER McCKONE: Because two -- with two

1 modes or it's bimodal that's kind of how

2 DR. MANN: No, it actually does a really good job
3 of transforming the data --

4 PANEL MEMBER MCKONE: Okay.

5 DR. MANN: -- when you look at it.

6 PANEL MEMBER MCKONE: Again, if it did do that --
7 I mean, a lot of things in populations do have modes,
8 because you have subgroups and.

9 DR. MANN: Right.

10 PANEL MEMBER MCKONE: You could have different
11 behaviors and then there will be a cluster low -- and the
12 mid -- I mean, you could still find the geometric mean.

13 DR. MANN: Right.

14 PANEL MEMBER MCKONE: It will be in the center,
15 but then the mass is dispersed in an odd way --

16 DR. MANN: Well, the other --

17 PANEL MEMBER MCKONE: -- but you didn't see that.

18 DR. MANN: Sorry for interrupting. The other
19 thing was that we have a -- one of the reasons we have
20 that rule of having to have a minimal detection frequency
21 of 65 percent is because you can get clustering of values
22 that are below the detection limit. So that becomes less
23 of an issue.

24 And here, it's really pretty much not as much of
25 an issue, because for so many of the urine metals, they

1 were above 90 percent detection frequency, but that is a
2 place where you can have problems. And that's also why we
3 didn't look at urinary manganese -- predictors of urinary
4 manganese. It's the same issue.

5 PANEL MEMBER MCKONE: I mean, that's an artifact
6 of the rule we applied to the limit of detection. That's
7 not a true cluster. It's just a cluster of --

8 DR. MANN: Right, exactly. It's an artifact of
9 the rule we applied that makes a geometric mean less
10 interpretable, I guess, which is...

11 CHAIRPERSON SCHWARZMAN: Ulrike.

12 DR. MANN: Did you have another suggestion, Tom,
13 about how we might want to look at -- or just that we
14 check?

15 PANEL MEMBER MCKONE: No, I would say -- so
16 actually the geometric mean is not biased very much by
17 having a limit of detection problem, because still as long
18 as you have some data below the median --

19 DR. MANN: Okay.

20 PANEL MEMBER MCKONE: -- the median -- the middle
21 point will still be the middle --

22 DR. MANN: Right.

23 PANEL MEMBER MCKONE: -- even if like half of
24 the -- or 25 percent of the population is the limit of
25 detection. That's why it's really important to use.

1 DR. MANN: Right.

2 PANEL MEMBER MCKONE: And where I'd be really
3 nervous is if you were talking about a mean where you had
4 a number of samples at or below the limit of detection,
5 because then you really bias the mean way off.

6 DR. MANN: Right.

7 PANEL MEMBER MCKONE: And so again, I -- as I
8 said at the beginning, it's the right way to do it.

9 DR. MANN: Right.

10 PANEL MEMBER MCKONE: I'm just worried about
11 whether -- particularly at the high end, you saw some kind
12 of clustering.

13 DR. MANN: Right.

14 PANEL MEMBER MCKONE: But it sounds like it was
15 pretty neatly log normal above --

16 DR. MANN: Yes.

17 PANEL MEMBER MCKONE: Great.

18 CHAIRPERSON SCHWARZMAN: Ulrike.

19 PANEL MEMBER LUDERER: Yeah, I just had a quick
20 question about your arsenic. So you reported associations
21 of total arsenic. Did you -- were you able to speciate
22 that or not?

23 DR. MANN: It was speciated. It's just not part
24 of this talk.

25 PANEL MEMBER LUDERER: Okay. Because --

1 DR. MANN: And there's actually another paper
2 that Sara or Duyen can talk more about that's looking at
3 what they found when they looked at speciated arsenic. So
4 arsenic wasn't speciated in everybody. It was speciated
5 in people that had elevated total arsenic. So there were,
6 I believe, 29 people in Expanded BEST who -- for which we
7 did speciation, is that correct?

8 PANEL MEMBER LUDERER: Because I'm thinking that
9 probably your elevated -- your association with eating
10 fish was related to organic arsenic through speciation?

11 DR. MANN: Right. So they've looked at that much
12 more carefully, and follow-up surveys also asked about
13 consumption of different foods including rice.

14 PANEL MEMBER LUDERER: Great.

15 CHAIRPERSON SCHWARZMAN: Other questions?

16 Oh, yeah. José.

17 PANEL MEMBER SUÁREZ: Oh, yeah it is.

18 Yeah, I also saw the uranium levels decrease with
19 time in the U.S. So that's an interesting analyses.

20 DR. MANN: Yeah.

21 PANEL MEMBER SUÁREZ: Did you then -- so the
22 question -- the next question would be did you look at the
23 different places where people are coming from, because
24 that would make a big difference for your --

25 DR. MANN: That is -- was part of the

1 questionnaire. The countries that people came from, if
2 they weren't born here, tended to be from Central and
3 South America or from Asia. And that's partly related to
4 oversampling in those two groups, but I haven't looked at
5 that more specifically yet. But it's certainly something
6 interesting --

7 PANEL MEMBER SUÁREZ: That would be interesting
8 looking at uranium just from the general --

9 DR. MANN: Right.

10 PANEL MEMBER SUÁREZ: -- from -- you know, from
11 water sources, which can be present --

12 DR. MANN: Right.

13 PANEL MEMBER SUÁREZ: -- or is it something more,
14 you know, radioactivity --

15 DR. MANN: Right.

16 PANEL MEMBER SUÁREZ: -- at power plants and what
17 not.

18 CHAIRPERSON SCHWARZMAN: Yeah, Lauren.

19 DIRECTOR ZEISE: Yeah. Just following up maybe
20 on the dispersion issue a little bit more. Did you look
21 at differences in variance across the groups?

22 DR. MANN: No, I haven't done that yet.

23 DIRECTOR ZEISE: That would be an interesting
24 thing to look at as well.

25 DR. MANN: Yeah.

1 CHAIRPERSON SCHWARZMAN: I had a question. I
2 understand the topic of today's discussion is metals, but
3 I'm looking at the list on the website of all the other
4 chemicals that are biomonitored in BEST. You're not
5 talking about them today. Have the analyses been done or
6 is that just a personnel limitation. And you mentioned --

7 DR. MANN: Yes.

8 CHAIRPERSON SCHWARZMAN: You mentioned
9 perfluorinated compounds you're working on a public
10 questionnaire.

11 DR. MANN: Yes. Yes. So there's been a paper in
12 the works. This paper and the other paper that I
13 mentioned have been in the works for quite awhile. It's
14 what happens when you have people who come and do most of
15 a project, but then have to leave. And so my goal is to
16 work with both of these people that have done a tremendous
17 amount of work to get those papers out.

18 And then we had a student project that looked at
19 perchlorate in Expanded BEST. It was not going to lead to
20 a publication, but they did do that analysis. There are a
21 lot of analyses that people started pursuing and then
22 stopped, maybe because they didn't see anything
23 interesting, but I still have to wade through those data.

24 But there's a lot here. And I think there's --
25 there's a lot to mine that I'm hoping -- and I'm hoping

1 that we'll start doing some of those analyses. So I'm
2 really excited that we have another student project in the
3 works.

4 CHAIRPERSON SCHWARZMAN: Phthalates and PBDEs
5 specifically --

6 DR. MANN: I am --

7 CHAIRPERSON SCHWARZMAN: -- are those analyses
8 started, or underway, or anything?

9 DR. MANN: I've seen some descriptive analyses on
10 the web, and that is it -- or, sorry, in our shared-drive.

11 I -- we do have one person who still works in the
12 Environmental Health Investigations Branch that was very
13 active on BEST. It's been really, really helpful to have
14 her historical knowledge.

15 CHAIRPERSON SCHWARZMAN: I think we have -- if
16 there's any other questions from the audience or the
17 Panel?

18 Veena, you have a question.

19 PANEL MEMBER SINGLA: Hi. Thanks so much for
20 that very informative presentation. It's very interesting
21 work. I have a comment and a question. I think it's
22 really great this is a collaboration with Kaiser. And I
23 wondered if there was any plans to present on the results
24 to the physicians and health professionals there at
25 Kaiser? I feel like it would be very informative and

1 valuable for them to understand more about the chemical
2 exposures their patient population is experiencing. So
3 just a thought there.

4 And a question on whether -- I know there's still
5 a lot of data analysis to be done just with the
6 information you have now, but if there's any plans in the
7 future to look at the health medical or health records of
8 the patients, and do any -- look at any associations or
9 outcomes there?

10 DR. MANN: So we have talked with Stephen Van Den
11 Eeden about looking at health outcomes and he says it's
12 conceivable that we could link our data with health
13 outcomes, as long as they are things that are commonly
14 measured in any clinical visit. And I like -- I think
15 your idea to present these data to Kaiser is a really,
16 really good one.

17 Thank you.

18 DR. WU: Can I add something to that?

19 CHAIRPERSON SCHWARZMAN: Yeah, Nerissa.

20 DR. WU: I just want to add that we'll be talking
21 about this a little more in the afternoon. But
22 Environmental Health Investigations Branch, not limited to
23 biomonitoring, does get a lot of cases coming across our
24 desks from physicians, from poison control, from counties
25 and local health officials. And one of the things we've

1 data from BEST. But a lot of the interest came from our
2 community partners, including APA Family Support Services,
3 as they've done a lot of work on education around fish and
4 mercury within their community.

5 And collaboration with our community partners was
6 essential in all phases of ACE from study design, to
7 recruitment of participants, to data collection in the
8 field, and dissemination of our findings.

9 There were two phases in ACE, ACE 1 and ACE 2.
10 And in each phase we recruited 100 participants, who were
11 18 years of age, had lived in the San Francisco Bay Area
12 for the prior year, and who self-identified as at least
13 partially Chinese in ACE 1, or Vietnamese in ACE 2.

14 Blood and urine samples were measured for four
15 metals, arsenic, cadmium, lead, and mercury. And the
16 perfluoroalkyl substances and polyfluoroalkyl substances
17 or PFASs.

18 --o0o--

19 MS. BAEHNER: Our community partners were APA
20 Family Support Services in ACE 1, and the Vietnamese
21 Voluntary Foundation in ACE 2. Samples were collected in
22 2016 for ACE 1, and 2017 for ACE 2.

23 Exposure questionnaires were verbally
24 administered in the preferred language of each
25 participant. And for each phase, we collected 100 urine

1 samples. And in ACE 1, 96 blood samples, and 99 blood
2 samples in ACE 2.

3 Our overall results return packets, which were
4 produced in the preferred language of the participant,
5 went out very recently. So for ACE 1, they went out in
6 August of last year, and ACE 2 just a few months ago.

7 --o0o--

8 MS. BAEHNER: The ACE exposure questionnaire was
9 used to collect information on demographics, diet,
10 occupation and industry, use of personal care product
11 usage, other activities like welding and metal working,
12 and smoking status. And, in particular, there are
13 extensive questions on rice and fish. There were 18
14 questions on rice consumption, and 26 questions about
15 fish. We also asked about other food items such as
16 seaweed, candies, spices, supplements, and traditional
17 remedies or medicines.

18 This was the first time that we had used such an
19 extensive questionnaire, and one that was tailored
20 specifically to our study population. A team worked to
21 develop questions that would get at the dietary habits and
22 other characteristics that might be specific or unique to
23 our particular population.

24 And with this extensive questionnaire, we have a
25 lot of very rich data that about potential exposure

1 sources. And so because we only recently returned our
2 results return, we're in the beginning steps of analyzing
3 this data.

4 And for more info on the exposure questionnaire,
5 as was mentioned, it's posted online, and I think there's
6 a copy outside, in case anyone wants to see it.

7 --o0o--

8 MS. BAEHNER: So this slide was shown in our last
9 meeting, but it summarizes some of the demographic
10 characteristics in both ACE study populations. I'm only
11 showing here characteristics where the differences between
12 ACE 1 and 2 were significant.

13 So in ACE 1, participants tended to have a higher
14 income and a higher education level. And in ACE 2, we
15 found that participants -- more participants tended to be
16 more recent immigrants.

17 --o0o--

18 MS. BAEHNER: So similar to what Jennifer showed
19 in BEST, I'm showing the geometric means of the three
20 blood metals and three urinary metals that we measured in
21 ACE. The format is similar in all of these -- excuse
22 me -- with the geometric mean for ACE 1 on the far left,
23 followed by ACE 2, then NHANES all races, 20 years and
24 older, and then finally NHANES Asians on the far right.
25 And the year of sample collection is noted beneath each

1 group.

2 And I'm really just showing this to give you a
3 sense of how the ACE metal levels compared to the NHANES
4 comparison groups. And so the first slide is blood
5 mercury. And you can see that both ACE 1 and 2 had higher
6 mean levels of blood mercury than either of the NHANES
7 comparison groups.

8 --o0o--

9 MS. BAEHNER: The next slide shows the levels of
10 blood cadmium. And again, you can see ACE 1 and ACE 2
11 have higher levels of blood -- sorry, blood cadmium than
12 the NHANES comparison groups.

13 --o0o--

14 MS. BAEHNER: And we have the mean levels of
15 blood lead. And ACE 1 and ACE 2 had higher mean levels of
16 blood lead than NHANES all races, but not NHANES Asians.

17 --o0o--

18 MS. BAEHNER: And now I'm going through the
19 urinary metals. This first slide is the urinary inorganic
20 arsenic. And ACE 1 and 2 had much higher levels of
21 inorganic arsenic than both NHANES comparison groups.

22 --o0o--

23 MS. BAEHNER: The next slide is the geometric
24 means for creatinine-adjusted urinary cadmium. And again,
25 ACE 1 and 2 have higher mean levels of urinary cadmium

1 than comparison groups.

2 --o0o--

3 MS. BAEHNER: And the last urinary metal was
4 mercury. And ACE 2 had a higher mean level of urinary
5 mercury than ACE I and both NHANES comparison groups.

6 --o0o--

7 MS. BAEHNER: So for the four metals measured in
8 ACE, biomonitoring has adapted levels of concerns, or LOCs
9 as I'll refer to them. And they're set primarily by the
10 CDC with the blood -- blood lead LOC set by CDPH.

11 When we have a participant that has a metal level
12 exceeding that LOC, it triggers an early notification
13 protocol. And for arsenic that can include further
14 analyses to determine the levels of organic and inorganic
15 arsenic species as was mentioned.

16 And for all metals, staff sends the participant a
17 letter with their elevated result or results, along with
18 the LOC and information about that metal, such as where it
19 can be found, some of the health concerns, and steps that
20 people can take to reduce their exposure.

21 It often also includes calls to participants,
22 where we go over the letter by phone. And we use a
23 follow-up survey in order to ask additional questions, try
24 to identify their exposure source. And I think those
25 surveys are some example surveys for arsenic and mercury

1 are posted online.

2 We make the calls at times when -- oh, and I
3 should say this is also an important opportunity for
4 participants to ask us questions about their results.

5 And we make the calls when we think we can most
6 reach people, including evenings and weekends. And calls
7 are conducted in the preferred language.

8 --o0o--

9 MS. BAEHNER: So this slide lists out the LOCs
10 for each metal. And we calculated how many participants
11 had an exceedance of each metal for both ACE 1 and 2. And
12 we expected to see higher levels of metals in ACE, but we
13 were really surprised at the number of participants with
14 exceedances, including exceedances of more than one metal.

15 And so because of this, we decided to conduct an
16 initial screening analysis to compare groups of
17 participants with exceedances to those without exceedances
18 to see how they would differ. The majority of exceedances
19 were in arsenic and mercury, which is what I'll focus the
20 rest of my talk on.

21 --o0o--

22 MS. BAEHNER: And so I've broken up the
23 exceedances by metal. And so I'm showing arsenic first
24 with the total arsenic exceedances. And these are - sorry
25 - percentages of participants within an exceedance of each

1 metal. So total arsenic is in the first line, and then
2 inorganic arsenic below.

3 --o0o--

4 MS. BAEHNER: We also calculated exceedances for
5 the BEST populations that Jennifer described. And so when
6 you add in Pilot and Expanded BEST, you can see the ACE 1
7 and 2 had a higher percentage of participants with an
8 arsenic -- an inorganic arsenic exceedance.

9 --o0o--

10 MS. BAEHNER: Excuse me.

11 Here are the exceedances for mercury with blood
12 mercury in the top few rows and urinary mercury below.
13 I've listed all blood mercury exceedances, and then I've
14 broken it out into two different groups, because the LOC
15 for each of those groups is different. So women between
16 the ages of 18 and 49 have a lower LOC because of the
17 potential risk if a woman is pregnant.

18 --o0o--

19 MS. BAEHNER: And so when we added in the
20 exceedances for BEST, again we can see that in ACE 1 and 2
21 there were a higher percentage of participants with blood
22 mercury exceedances. And so this data that I'm showing on
23 blood mercury, along with the arsenic data, really shows
24 that ACE study participants were more highly impacted than
25 BEST. And with blood mercury and arsenic, these are a

1 real public health concern.

2 --o0o--

3 MS. BAEHNER: And so this next slide shows
4 percentages of participants in each study, who had an
5 exceedance of one or more metals. The top row is the
6 number of -- or, I'm sorry, the percentage of participants
7 that did not have an exceed of any metal, followed by one
8 metal, two metals and even three.

9 And again, we can see that our ACE Study
10 populations were much highly -- more highly impacted than
11 the BEST Study populations. And this table highlights, A,
12 the impact to individual participants, and also the work
13 of our program as we use our early notification protocol.

14 --o0o--

15 MS. BAEHNER: So once we saw the high number of
16 exceedances in ACE, we wanted to find out more about these
17 participants.

18 We first grouped participants with an exceedance
19 of any metal and compared them to participants without any
20 exceedance. And we looked at a number of variables from
21 the exposure questionnaire, including demographics,
22 immigration characteristics, and diet characteristics.

23 --o0o--

24 MS. BAEHNER: And so first, I'm showing the
25 exceedances and non-exceedances in ACE 1 and then in ACE

1 2. I'm only showing variables where the difference
2 between exceedance categories was significant, and those
3 are bolded in black.

4 And so in ACE 1, participants with any exceedance
5 were more likely to complete the interview -- the sample
6 collection interview in a language other than English.

7 And in ACE 2, participants had a lower level of
8 education -- participants with an exceedance had a lower
9 level of education than participants without an
10 exceedance.

11 --o0o--

12 MS. BAEHNER: Here's some additional variables,
13 again only showing variables where the difference in
14 exceedance groups was significant. In ACE 1, participants
15 with exceedances of any metal reported that they ate fish
16 more frequently than participants without exceedances.

17 And in ACE 2, participants with any exceedance
18 reported having spent a smaller portion of their life and
19 fewer years in the United States than participants without
20 an exceedance.

21 --o0o--

22 MS. BAEHNER: And so the results I just showed
23 you tells a little bit about participants with
24 exceedances, but we wanted to take a closer look,
25 particularly at participants with an exceedance of blood

1 mercury and urinary inorganic arsenic alone.

2 So to do this, we grouped participants with an
3 exceedance of blood mercury and compared them to
4 participants without that exceedance, and grouped
5 participants with an exceedance of inorganic arsenic and
6 compared them to participants without that exceedance.

7 --o0o--

8 MS. BAEHNER: And so this is the data for the
9 blood mercury exceedance groups, again only showing
10 variables where the difference between groups was
11 significant. And in ACE 1, participants with a blood
12 mercury exceedance, again were more likely to have
13 completed the interview in a language other than English.

14 And in ACE 2, participants with a blood mercury
15 exceedance were more often female and had a lower
16 household income than participants without a blood mercury
17 exceedance.

18 --o0o--

19 MS. BAEHNER: These are some additional variables
20 for the blood mercury exceedances. In ACE 1, participants
21 with a blood mercury exceedance had spent fewer years in
22 the United States and reported eating fish more frequently
23 than participants without a blood mercury exceedance.

24 And in ACE 2, participants with a blood mercury
25 exceedance were younger and also had reported fewer years

1 in the United States and eating fish more frequently than
2 participants without that exceedance.

3 --o0o--

4 MS. BAEHNER: And finally, I'm showing you the
5 data for the inorganic arsenic exceedances. In ACE 2,
6 participants with an inorganic arsenic exceedance reported
7 having spent a smaller portion of their life and fewer
8 years in the United States than participants without that
9 exceedance.

10 And in this initial screening, these were the
11 only variables where the differences in exceedance groups
12 were significant for inorganic arsenic.

13 --o0o--

14 MS. BAEHNER: So this initial screening analysis
15 that I'm presenting today is really just the first step at
16 looking more closely at participants with high metal
17 levels. And we will continue our analyses to examine the
18 relationship between a metal exceedance with additional
19 characteristics that are known to be associated with
20 exposures, such as the use of traditional remedies,
21 specific types and sources of rice and rice products, and
22 specific types, sources, and parts of fish.

23 And we'll also do some more in-depth analyses to
24 model the relationship between metal levels and some of
25 our other characteristics, like demographics and diet.

1 But I also want to say a few words about what
2 we've learned in talking with our participants in these
3 early notification calls. We've learned a lot that we
4 hope to apply to really help evaluate and improve our
5 follow-up protocol.

6 For instance, we're not always able to reach
7 participants. Either our participant's phone number has
8 changed, suggesting that some of this population might be
9 more mobile. In other instances, we were just not able to
10 reach the participant, and they did not call us back.

11 And when we speak with participants, there was a
12 very wide range of reactions, from people who are -- you
13 know, appreciate the call, but aren't particularly
14 concerned about their result, to people who are very
15 worried about what their result means for their health.

16 And we've also had a case with a highly elevated
17 result for inorganic mercury. And when we followed up
18 with this participant in their preferred language, we
19 tried to identify their exposure source by using our
20 follow-up survey. And when the interview did not shed a
21 whole lot of light on the potential source, we offered to
22 come to their home directly to investigate what the source
23 might be.

24 In this case, the participant did not want us to
25 follow up with them further, even after we explained the

1 dangers of this particular exposure. And while this is
2 only one case, it does highlight some of the hurdles that
3 we face in following up with biomonitoring results.

4 So the results of our screening analysis, along
5 with what we've learned with talking with participants,
6 are helping us think about how to better design and target
7 our messages. And I think as Nerissa mentioned, this goes
8 beyond biomonitoring, as we do get a lot of cases of
9 mercury and other metal exposures in EHIB. And EAS,
10 Exposure Assessment Section, tries to be a resource to
11 these cases.

12 --o0o--

13 MS. BAEHNER: So I just want to -- well, first, I
14 want to thank ACE Project participants for taking the time
15 to be a part of our study. They donated a blood and urine
16 sample to us, and share their experiences and information
17 with us through the exposure questionnaire. Without them,
18 we can't do this work.

19 I also want to thank our community partners, APA
20 and VIVO, and really thank them for their input and hard
21 work in this project, and in ongoing work as we try to
22 translate biomonitoring messages -- or biomonitoring
23 results into meaningful messages. And then, of course,
24 Biomonitoring California staff who have worked on this
25 project.

1 So with that...

2 CHAIRPERSON SCHWARZMAN: Great. Thank you so
3 much, Lauren.

4 MS. BAEHNER: Yes.

5 CHAIRPERSON SCHWARZMAN: We have -- we're doing
6 fine with time just for everybody's -- feel too rushed.
7 And we have time for questions to Lauren, and then we'll
8 have a half hour for discussion. And while everyone is
9 shuffling papers, I'll ask a question --

10 MS. BAEHNER: Sure.

11 CHAIRPERSON SCHWARZMAN: -- which is it's really
12 interesting to see this analysis of the group with --
13 groups with exceedances versus non-exceedances. And I
14 kind of summarized the factors that were associated with
15 any exceedances --

16 MS. BAEHNER: Um-hmm.

17 CHAIRPERSON SCHWARZMAN: -- like education, time
18 in U.S., fish consumption, non-English language --

19 MS. BAEHNER: Um-hmm.

20 CHAIRPERSON SCHWARZMAN: -- female and
21 decreased -- lower income.

22 MS. BAEHNER: Um-hmm.

23 CHAIRPERSON SCHWARZMAN: And I wondered if you've
24 looked yet at whether those factors differ between the ACE
25 population and the BEST population, and whether you can

1 tell what might drive that difference between the findings
2 in the two studies?

3 MS. BAEHNER: I -- we -- I have not looked at
4 them compared to the BEST populations. And I don't -- I'm
5 not sure how much that has been looked at within the BEST
6 to be honest. Maybe somebody else can better answer that
7 question, but I think that is a good idea.

8 CHAIRPERSON SCHWARZMAN: I saw Jennifer nodding
9 vigorously.

10 DR. MANN: Good idea.

11 CHAIRPERSON SCHWARZMAN: Good idea.

12 MS. BAEHNER: It's a good idea.

13 CHAIRPERSON SCHWARZMAN: Great.

14 Questions from the Panel?

15 Yes, Tom.

16 PANEL MEMBER MCKONE: Very interesting. Thanks
17 for the presentation. The question I have is early on in
18 the profile of the population, the household income is
19 actually quite low for a lot of them. It's below the
20 poverty line. And I guess the question is -- and again,
21 you saw income as a factor, but I also wonder how much is
22 that a factor in making it difficult to do follow up?
23 Because then again, I'm sort of surmising a bit, but I
24 think people who are right around the poverty limit
25 probably are struggling with where they live, and are

1 going to move frequently, or may not have a home at all.
2 I mean, you start the study and then you can't find them.

3 So I don't know if the fact that you had a lot of
4 people right at the poverty or very close to the poverty
5 limit put at jeopardy the ability to follow up the
6 population?

7 MS. BAEHNER: I think that's an interesting
8 point. I mean I can't say if that was the direct reason
9 or not, but we did have some difficulty in reaching
10 participants in our follow-up protocol.

11 And off the top of my head, I mean, I think we
12 were able to reach a number of people. But oftentimes, we
13 would find that a phone number was no longer in service.
14 And so, yeah, I mean, I think people's phone numbers did
15 change a lot more frequently.

16 CHAIRPERSON SCHWARZMAN: Other questions from the
17 Panel?

18 Is that Oliver? Were you making movement?

19 Yeah.

20 PANEL MEMBER FIEHN: I wanted to know if you have
21 details about the people who exceeded the different metal
22 levels in the BEST Study, were these also mostly
23 Asian/Pacific Islanders?

24 MS. BAEHNER: You know, again, that's a good
25 question. I did not look at that. I don't know if that

1 has been looked at in the past or not, at least not in
2 this way.

3 CHAIRPERSON SCHWARZMAN: I might refer you to
4 Jennifer's slide number 19, the numbers are super small in
5 here.

6 (Laughter.)

7 CHAIRPERSON SCHWARZMAN: That's the breakdown by
8 race and ethnicity. And this --

9 MS. BAEHNER: Okay.

10 CHAIRPERSON SCHWARZMAN: And it is not probably
11 the same measure of exceedance, is that right? It's not
12 like exceedance of one, versus two, versus three? But --
13 so it's not directly comparable, but --

14 MS. BAEHNER: No.

15 CHAIRPERSON SCHWARZMAN: -- you can see that for
16 blood mercury, urinary mercury, and total arsenic, API is
17 elevated compared to non-Hispanic whites for all of those,
18 right?

19 MS. BAEHNER: Yep.

20 PANEL MEMBER FIEHN: So then it appears to be
21 really an ethnic issue.

22 MS. BAEHNER: I mean, I think there's probably a
23 lot of factors there, and that's something that we'll
24 definitely continue to look at.

25 CHAIRPERSON SCHWARZMAN: I had an additional

1 question about the future analyses.

2 MS. BAEHNER: Sure.

3 CHAIRPERSON SCHWARZMAN: And I noticed that you
4 had in the questionnaire issues about occupation and
5 welding, metal working.

6 MS. BAEHNER: Right.

7 CHAIRPERSON SCHWARZMAN: Do you have enough data
8 to include that in your future analyses?

9 MS. BAEHNER: That's a good question. I think we
10 do have questions about specific types of occupation, in
11 terms of how that distri -- the distribution is among
12 those questions. The number might be a little bit small,
13 but that's something we'll definitely take into account.

14 CHAIRPERSON SCHWARZMAN: And I almost wonder if
15 some of that might correlate with some of the other
16 factors that you're finding associated, like income
17 level -- where low income can correspond to lack of --

18 MS. BAEHNER: Sure.

19 CHAIRPERSON SCHWARZMAN: -- occupation or it can
20 correspond to certain --

21 MS. BAEHNER: Certain types of occupation.

22 CHAIRPERSON SCHWARZMAN: -- jobs that are more --
23 a higher likelihood of exposure.

24 MS. BAEHNER: Yeah, definitely. That's
25 something --

1 CHAIRPERSON SCHWARZMAN: Anyway, I'd just be
2 curious about that and whether it can make your list of
3 future analyses?

4 MS. BAEHNER: Yeah, definitely. That's something
5 we'll take into account.

6 CHAIRPERSON SCHWARZMAN: Other questions?

7 No.

8 Yes, Eunha

9 PANEL MEMBER HOH: Just a question. Is there any
10 reason to select the Chinese, or partially Chinese, or
11 partially Vietnamese?

12 MS. BAEHNER: I believe the ACE Project really
13 came again from data, but also the motivation -- or, I'm
14 sorry, the interest of APA Family Support Services, they'd
15 worked for a long time with their community, and I believe
16 they work primarily with Chinese-Americans in San
17 Francisco. And so I believe that was -- we wanted to do a
18 community-specific study that would really look at body
19 burden of mercury.

20 CHAIRPERSON SCHWARZMAN: Any other questions from
21 either the panel or the audience for Lauren before we let
22 her off the hook?

23 Yeah, Veena.

24 PANEL MEMBER SINGLA: Thank you for that
25 presentation. Very interesting results.

1 And I -- forgive my ignorance on this, in terms
2 of exposure sources, I know for lead that housing
3 characteristics can have a significant impact. And I just
4 wondered for the other metals if there was any known
5 associations with housing characteristics?

6 MS. BAEHNER: With housing, I mean, definitely
7 lead comes to mind. I'm not aware of any other particular
8 housing characteristics that would impact exposure, but
9 that's something we can definitely look at.

10 Yeah, housing characteristics.

11 CHAIRPERSON SCHWARZMAN: Proximity to roadways
12 maybe?

13 MS. BAEHNER: Perhaps.

14 CHAIRPERSON SCHWARZMAN: For soil deposition of
15 lead.

16 MS. HOOVER: This is Sara. I think that's an
17 interesting question. I mean, we research each metal in
18 detail about what are the most likely sources, and we just
19 did an update of all of those. So actually, the sample
20 packet you have are the old fact sheets. We did a major
21 update in this part of CARE. So nothing is jumping out in
22 my mind, but I think it's an interesting question.

23 I also just wanted to follow up a little bit more
24 on Eunha's question. So as Lauren had mentioned, part of
25 it was motivation of BEST. The other motivation though

1 was the fact that it's known that Asians are, you know,
2 more highly exposed. And that's been shown, but not
3 sufficient data on subpopulations of Asians, so sort of
4 grouped Asians.

5 But these studies allowed us to look specifically
6 at Chinese, specifically at Vietnamese, and really
7 generating some new information that adds to the body of
8 knowledge quite significantly.

9 MS. BAEHNER: And there was one thing I wanted to
10 mention was that some of the results around age, language,
11 and time in the United States, I think really does
12 highlight the importance of our follow-up services and
13 educational messaging being culturally and linguistically
14 appropriate. So I just wanted to add that.

15 CHAIRPERSON SCHWARZMAN: I'm just -- I had one
16 other thought --

17 MS. BAEHNER: Um-hmm.

18 CHAIRPERSON SCHWARZMAN: -- about this difference
19 between ACE and BEST population.

20 MS. BAEHNER: Um-hmm.

21 CHAIRPERSON SCHWARZMAN: It's interesting to me
22 that the recruitment pool was so different, right?
23 There's Kaiser patients versus just Asian --

24 MS. BAEHNER: Um-hmm.

25 CHAIRPERSON SCHWARZMAN: -- you know Chinese or

1 Vietnamese immigrants, or Chinese- or Vietnamese-Americans
2 in San Francisco.

3 MS. BAEHNER: Um-hmm.

4 CHAIRPERSON SCHWARZMAN: So that recruitment pool
5 is really different. I would be very interested to see if
6 that bears out on the population characteristics that are
7 associated with higher risk of exceedances.

8 MS. BAEHNER: Um-hmm. Yeah, definitely. Yeah,
9 and we did use a very different recruitment sample, so
10 yeah.

11 CHAIRPERSON SCHWARZMAN: Okay. Thank you so
12 much, Lauren --

13 MS. BAEHNER: All right. Thank you.

14 CHAIRPERSON SCHWARZMAN: -- for that helpful
15 presentation.

16 MS. BAEHNER: Yeah.

17 CHAIRPERSON SCHWARZMAN: We now have time for a
18 general discussion of the topics and talks from this
19 morning, and that can be both from the Panel and from the
20 audience, we'll do a sort of formal check for public
21 comment at some point in this. But a reminder that if
22 you're listening in on the webinar, you can send questions
23 to biomonitoring@oehha.ca.gov, or -- questions or comments
24 and we'll read those as it comes along.

25 Oh, good. That's up on the screen now.

1 Anyone want to start?

2 Tom.

3 PANEL MEMBER MCKONE: Well, it's more -- it's a
4 follow-up on the issue of exposures changing when they
5 come to the U.S., and the one is -- I mean, I think
6 uranium is an interesting case. And I bring this up
7 because it's like 30 years ago my dissertation was on the
8 biogeochemistry of radionuclides, something interesting.
9 So unless you live near a uranium mine or a nuclear melt
10 down --

11 (Laughter.).

12 PANEL MEMBER MCKONE: -- which is pretty rare,
13 most of the uranium that you would find in an individual
14 is coming from food and water. And it's granitic, granite
15 type, soils that have the highest uranium, and -- but it's
16 also sensitive not just to the type of soil -- the soil
17 origin, but also the EH, oxidation reduction, and the pH
18 of the soil that liberates the -- so the interesting
19 thing, I mean, you would expect people who come from --
20 now, I don't know where the people come from, but if
21 they're coming from a country with granitic soils, which
22 is true of areas with very thin -- like parts of Asia have
23 a very thin topsoil layer, and it's a granite origin soil.
24 In the U.S., we have sediment origin soils.
25 They're wonderful, rich, loamy soils, like in the midwest,

1 and even in California. So our uranium levels are quite
2 low. It's actually a country where you would expect the
3 food supply. Now, that's things that are produced in the
4 U.S. Some of our food comes from other places.

5 But in general, our groundwater, there's some
6 isolated spots where it's higher. But, in general, our
7 groundwater plants are low in uranium. I guess, it's the
8 one good news story.

9 CHAIRPERSON SCHWARZMAN: Other comments?

10 Eunha.

11 PANEL MEMBER HOH: Yes. It's more a question.
12 But did you find anything about this fish consumption data
13 and the mercury kind of significance? I kind of see some,
14 but I think it will be interesting to hear.

15 MS. BAEHNER: Yes. In the analysis that we've
16 done so far, when we looked at participants with
17 exceedances of blood mercury, we found those participants
18 had reported eating fish more frequently. And that is in
19 line with what we know about mercury in fish, and we kind
20 of expected to see that.

21 PANEL MEMBER MCKONE: Just to probe a bit more on
22 the fish issue. So mercury levels in fish vary
23 tremendously --

24 MS. BAEHNER: Right.

25 PANEL MEMBER MCKONE: And a lot -- I'm assuming a

1 lot of the Asian, especially the ones that are in the
2 poverty level are catching fish out of the bay or off of
3 bridges, I mean, locally. So is there a way to find out
4 what fish species they're eating. Are they really eating
5 the ones that are high in mercury?

6 MS. BAEHNER: Yeah. That's definitely something
7 that we're going to look at. In the questionnaire, we
8 have extensive questions about types of fish, where
9 they're most frequently eating fish, whether it's
10 restaurants, stores, street sellers, or we also have
11 questions about fish that are caught locally. And then
12 within those categories, what are the most frequently --
13 what are the types of fish that are most frequently eaten.

14 So we'll definitely be able to look a little bit
15 at that. And also, yeah, definitely parts of fish, like
16 fish organs, or fish skin, or fish eyes, for example.

17 CHAIRPERSON SCHWARZMAN: Ulrike.

18 PANEL MEMBER LUDERER: Can you hear me?

19 Okay. Great. Thank you.

20 I want to also echo that is a really great, very
21 interesting, and wonderful work the Program is doing.

22 MS. HOOVER: Closer.

23 PANEL MEMBER LUDERER: Closer?

24 MS. HOOVER: Yes.

25 PANEL MEMBER LUDERER: Okay. All right.

1 So kind of getting back -- I mean, we -- so, no,
2 it's not surprising, and that's why you ask all those
3 questions about fish consumption and what kind of fish
4 that that -- that large -- high consumption of fish is
5 associated with elevated blood mercury concentrations.
6 And also, you know, it's great too to see in the
7 questionnaire all the questions about rice consumption and
8 the association with inorganic arsenic.

9 And I was wondering whether you've been able to
10 get a sense, working with these community groups, how much
11 awareness there is of those, you know, associations? I
12 mean, obviously following up with the individuals to tell
13 them. I mean, you can get a sense from them, but I was
14 wondering if you have also kind of in the larger
15 community, and whether part of the plan, you know, might
16 be are you going to do kind of follow-up, I don't know,
17 presentations with the community groups maybe --

18 MS. BAEHNER: Right.

19 PANEL MEMBER LUDERER: -- or assist them in
20 getting the word out, if maybe it's not --

21 MS. BAEHNER: Yeah, I think --

22 PANEL MEMBER LUDERER: -- that people aren't
23 aware of it, or is it -- sort of one more part of that is
24 or maybe people are aware of it, but it's -- you know,
25 there might be economic reasons why they're not able to,

1 you know, say buy rice that's from, you know, places where
2 it's known to have less arsenic in it --

3 MS. BAEHNER: Um-hmm.

4 PANEL MEMBER LUDERER: -- or, you know, buy fish
5 that -- of less mercury.

6 MS. BAEHNER: Yeah, definitely. I think those
7 are good points.

8 So the first part of is there kind of a more -- a
9 greater awareness of mercury and fish in particular? I
10 can talk a little bit about that. I know that, especially
11 with ACE 1 working with APA, they had worked on that issue
12 as an organization and with their community for a number
13 of years and were really interested in this type of
14 study. So that awareness I think is there, to some
15 extent.

16 And then when we talk to individual participants,
17 some participants have kind of some idea of it. But for
18 others, it is kind of new information that we're sharing.

19 And then, I think the last part of your question
20 how we're going to share these more widely? In ACE 1, we
21 had a community meeting where APA worked with us to invite
22 the community at large, and we went over some of these
23 study findings. And we're working with the results from
24 ACE 2 to do a similar type of meeting.

25 But, yeah, we definitely are really interested in

1 getting this message out more broadly.

2 PANEL MEMBER HOH: So just following up, I've
3 been working on some like seafood diet and persistent
4 organic pollutants in breast milk kind of project I've
5 been working on. It's fascinating that I was thinking
6 about mercury as well, you know, that we found in
7 significant like seafood consumption and then persistent
8 organic pollutants in the breast milk. So this study is
9 pretty interesting, because the mercury also is pretty
10 abundant in fish.

11 MS. BAEHNER: Um-hmm.

12 PANEL MEMBER HOH: One thing that -- I'm a
13 Korean, you know, so -- so no matter what their incomes
14 are, you know, when people come here as an adult, they
15 have some kind of ideas about their food, you know.

16 MS. BAEHNER: Um-hmm.

17 PANEL MEMBER HOH: So it might be something that
18 could be also related to like they buy some rice from --
19 with certain brand --

20 MS. BAEHNER: Um-hmm.

21 PANEL MEMBER HOH: -- or certain source, which
22 they think it's good for them or something, you know.

23 MS. BAEHNER: Um-hmm. Sure.

24 PANEL MEMBER HOH: So I think it's something very
25 cultural issues going on together.

1 MS. BAEHNER: Yeah, I mean, I think that's a good
2 point. And in our messaging, you know, we really try to
3 encourage people that if they are interested in lowering
4 their levels or their exposure, that they at least just
5 try to have some variety in, for example, types of rice,
6 or where the rice is sourced from, because it is hard to
7 tell people, no, don't eat a certain thing.

8 PANEL MEMBER HOH: And then one more thing that
9 we --

10 MS. BAEHNER: Yeah.

11 PANEL MEMBER HOH: -- is that the data -- the
12 data analysis that we found in my study -- in my
13 project --

14 MS. BAEHNER: Um-hmm.

15 PANEL MEMBER HOH: -- we found that we
16 collaborated with a biostatistician that he brought a
17 really interesting novel type of analysis. It's called
18 LASSO or something. But it's sort of like in a way the
19 small data set that can still see the trend --

20 MS. BAEHNER: Um-hmm.

21 PANEL MEMBER HOH: -- you know, what -- even
22 though they don't -- we don't see the significance in the
23 very conventional statistical analysis. But with that
24 kind of novel analysis, statistical analysis, they were
25 able to see the trend with the small set of relatively not

1 large set of data. So something that I think will be
2 interesting to delve into the data.

3 MS. BAEHNER: Yeah. Yeah. Thank you. That's
4 something we can look at.

5 CHAIRPERSON SCHWARZMAN: Carl.

6 PANEL MEMBER CRANOR: Yes. Thank you. You talk
7 about the exceedances. With respect to mercury, there's
8 been a lot of work done

9 THE COURT REPORTER: Closer to the mic.

10 PANEL MEMBER CRANOR: Closer. Okay.

11 How close is this to really worrisome levels? I
12 mean, I -- friends of mine have done work in the Faroe
13 Islands, probably pretty bad there, because women have had
14 to change their traditional diets, so that they give birth
15 to children that don't have -- they're not on the way to
16 brain damage.

17 MS. BAEHNER: Um-hmm.

18 PANEL MEMBER CRANOR: And so I'm wondering -- so
19 that's very bad. What are you seeing how far is it from
20 very bad?

21 MS. BAEHNER: I think that's an interesting
22 question. We see, you know, a range of results from right
23 around where our LOC is set, and those are really meant to
24 be protective. And we do kind of have a way to break, at
25 least for our blood mercury, the extent of the risk based

1 on their results.

2 And does -- yeah, in terms of the -- relative to
3 the LOC, the range might be -- this is off the top of my
4 head, but maybe double the LOC. So we're not seeing
5 anything that is, you know, a really significant concern
6 with blood mercury, where we need to take further
7 immediate action. It's more we want to let these
8 individuals know the results, so that they can take some
9 individual action.

10 PANEL MEMBER CRANOR: So you're not seeing levels
11 close to the Faroe Islands. I mean, I don't know if
12 you're aware --

13 MS. BAEHNER: No.

14 PANEL MEMBER CRANOR: -- of those things.

15 MS. BAEHNER: No, definitely not, yeah.

16 CHAIRPERSON SCHWARZMAN: Other comments or
17 discussion items? We can go beyond these study results.

18 PANEL MEMBER SUÁREZ: I have a question about --

19 CHAIRPERSON SCHWARZMAN: Yeah, José.

20 PANEL MEMBER SUÁREZ: Just one more question.

21 So I'm looking at just the differences by sex.
22 So I see in both ACE 1 and ACE 2, it's a pretty consistent
23 message, even the ACE 1 is significant but maybe it's
24 just -- maybe it's just a power issue. Have you thought
25 much about that? Are there consumptions different for

1 fish between males and females that could be potentially
2 explaining the differences and have you looked at that?

3 MS. BAEHNER: We have not looked at that yet
4 within ACE. From what I'm remembering, I think they
5 tended to be more female participants, but that is
6 something we could take a look at. I'm not aware of any
7 particular trends, but --

8 PANEL MEMBER SUÁREZ: Yeah, I mean, it just shows
9 that there's --

10 MS. BAEHNER: -- in terms of fish consumption.

11 PANEL MEMBER SUÁREZ: -- substantial differences
12 there across those that have the higher exceedances for
13 mercury, so it would be really important to --

14 MS. BAEHNER: Yeah, that's true within blood
15 mercury.

16 PANEL MEMBER SUÁREZ: -- dig a little bit further
17 into that.

18 MS. BAEHNER: Yeah, definitely.

19 CHAIRPERSON SCHWARZMAN: I'm curious, because
20 metals are so significant in terms of developmental
21 toxicants, neurotoxicants particularly, whether either of
22 these studies had any pregnant women? There's probably
23 not the power there to look at that. What was the -- I
24 mean, you have a child-bearing age category --

25 MS. BAEHNER: Um-hmm.

1 CHAIRPERSON SCHWARZMAN: -- but not actual
2 child-bearing status.

3 MS. BAEHNER: Yeah, we did not ask in ACE, and I
4 don't think in BEST either. I don't think we asked that
5 question

6 MS. HOOVER: Go to the mic.

7 DR. MANN: Yeah, I'm trying to remember -- this
8 is Jennifer Mann speaking. I'm trying to remember what
9 the specific questions were around pregnancy in BEST.
10 They were there. I don't believe -- I'm not sure if we
11 asked if the were pregnant at the time. But we'd asked
12 the number of pregnancies they'd had. Just trying to
13 remember, because I vaguely seeing a freque -- do remember
14 seeing a frequency of pregnancy and it was pretty low,
15 like people that might have been pregnant, so we may have
16 asked that question. I think it was low. And you saw the
17 skew in BEST was toward older people. Median age was 48,
18 so...

19 CHAIRPERSON SCHWARZMAN: Thank you.

20 Yeah, Carl.

21 PANEL MEMBER CRANOR: One more follow-up
22 question. I know that the people that have done the
23 studies in the Faroe Islands seem to have identified a
24 gene or genes that make people more susceptible. You
25 probably haven't gone there, but it may be worth looking

1 at.

2 MS. BAEHNER: No, we definitely have not gone
3 there. And I think that is very interesting, but it's not
4 something that I think we can address in biomonitoring.

5 CHAIRPERSON SCHWARZMAN: Any points from the
6 audience? Maybe I should officially call for public
7 comment and see if there's anything on the web?

8 MR. BARTLETT: Nothing on the web.

9 CHAIRPERSON SCHWARZMAN: Nothing on the web.

10 Okay. If -- maybe I'll take one other moment and
11 just before we move on to our short topic before lunch,
12 ask for last questions from any -- or not necessarily
13 questions, but discussion points from any Panel members?

14 MS. HOOVER: This is Sara Hoover. I just also
15 wanted to highlight again, Lauren mentioned and Nerissa
16 mentioned, one of the opportunities we took for this item
17 was to finally get some of our materials on the web, which
18 I hope and think will be a resource for many other
19 programs. We had a lot of inquiries about our exposure
20 questionnaire. If you had chance to look at -- I shared
21 it with the Panel yesterday, and our guests discussants,
22 and there's a sample packet on the table, and it's now
23 posted.

24 But really I think the ACE questionnaire was
25 amazing. It's really quite a triumph of research and work

1 and illustrative pictures. It's pretty amazing that we
2 have this incredible resource. And as Lauren mentioned,
3 our policy is also that we don't start publishing papers
4 and all, until results are returned. So we've just done
5 that for ACE 2. So now it's our opportunity to really
6 start delving into the data.

7 So on the web now, we have that exposure
8 questionnaire posted, the pictures posted, also two of our
9 follow-up surveys that we use, and then a mock results
10 return packet. So it's -- I encourage people to take a
11 look at that, and just remember, if you don't have
12 comments today, you're always free to email us at any
13 time, including the Panel, to send us comments offline.
14 Just don't email each other. But other than that, you're
15 welcome to send us input at any time.

16 CHAIRPERSON SCHWARZMAN: Great.

17 So we'll pick up a few minutes for lunch, which
18 is always nice. Before we break for lunch, we have one
19 quick agenda item, which is that a topic that came up not
20 last meeting, but the meeting before, but it's a topic
21 that comes up periodically on the panel is whether the
22 panel can do anything in a sort of more formal way about
23 kind of requesting resources that we see lacking for the
24 Program support.

25 And at various times in the past, the Panel --

1 some Panel members have written letters sort of expressing
2 the trust and faith in the Program and wishes for future
3 support. So we have prepared -- I have prepared another
4 letter like that. And with some support from another --
5 one other Panel member as permitted under Bagley-Keene,
6 Veena Singla.

7 And so that letter is available today for any
8 other Panel members to sign, who would like to support
9 that. And there is -- we'll have copies for the Panel
10 members to look at here during lunch. And then a single
11 copy that you would sign. So we have several copies that
12 you can read, so not everyone is trying to read the same
13 copy, but just make sure not to sign -- I actually marked
14 them don't sign this one, so that all signatures, if
15 you're interested in signing it, go on the same version.

16 And there is also a copy of the letter at the
17 table in the front, so it's available for the public to
18 read. And that can all happen during lunch.

19 So I'm just looking to Sara to make sure we don't
20 have to do anything else before we break.

21 Yeah.

22 PANEL MEMBER MCKONE: I have a question. Is
23 there a signature line with our name on it or we just sign
24 wherever we can fit our name in.

25 CHAIRPERSON SCHWARZMAN: I didn't presume that

1 all Panel member would want to sing, so there's no
2 signature -- you'll have to sign and write your name.

3 PANEL MEMBER MCKONE: Okay.

4 CHAIRPERSON SCHWARZMAN: It's signed and print
5 but me and by Veena, because we've worked on it.

6 Question, Carl.

7 PANEL MEMBER CRANOR: Yes. We've had -- we will
8 now have a change of Governors. And it's been difficult,
9 I know in conversations with various people, to jar a
10 little extra money out of Governor Brown. We have a new
11 Governor. Maybe that would make a difference. I don't
12 know.

13 But Jerry Brown was pretty tight with his fist.
14 Maybe there will be -- and this isn't a huge amount of
15 money probably what the Biomonitoring Program needs. So
16 it's a good time to ask.

17 CHAIRPERSON SCHWARZMAN: Well, I think that's
18 just sort of prerogative of any individual Panel member.
19 If you have some place that you want to do some advocacy,
20 that's completely up to you. It's not coming from the
21 Program. It would be coming from us as individual Panel
22 members.

23 And one thing that I'm considering is, you know,
24 we were each appointed by different people, and that
25 person is invested in your role on the Panel, and your

1 input to the Program. And so that might be a point of
2 contact for you if you want to share the letter with your
3 appointing authority. But I'm not requiring that anybody
4 do that, but just that's sort of what I'm intending.

5 PANEL MEMBER MCKONE: So as a comment, or sort of
6 a thought, that it might be useful -- I mean, you talk
7 about writing letters. So it might be useful for us to
8 write a letter to the new Governor introducing ourselves,
9 explain what we do. I mean, it will go through the
10 channels, but I don't -- maybe he knows.

11 But it might be useful just to say this is who we
12 are. I think we're doing something really important.
13 Now, it may be the whole Panel, or it may be just Governor
14 appoint -- I'm one of the Governor appointees. And
15 Schwarzenegger originally appointed me, and then Brown
16 appointed me twice. So -- and there wasn't a lot. I
17 mean, it just went right through.

18 But maybe it is a good idea for those of us who
19 are Governor appointees to sort of point out here we are,
20 and this is what we do, and -- just so you know that we're
21 one of your Governor appointees. And then draw some
22 attention to the Committee.

23 CHAIRPERSON SCHWARZMAN: All right. I think
24 that's an interesting idea. And if you wanted to
25 spearhead that as a Governor -- I'm not a Governor

1 appointee. I'm Speaker of the Assembly appointee -- but
2 to write such a letter. And I would just remind you that
3 you can recruit one other Panel member to work on it with
4 you, but -- and then you would present it publicly for
5 think other Governor appointees to sign on, if they
6 wanted. So just as a reminder.

7 Any other thoughts or questions?

8 Veena.

9 PANEL MEMBER SINGLA: I'll just follow up on the
10 comment I made this morning about the report to the
11 Legislature. I do think that's a -- it's a great
12 opportunity to engage the Legislature and the
13 administration on the Program and its accomplishments. So
14 I'll definitely look forward to updates once there is more
15 information on when those might be coming out.

16 CHAIRPERSON SCHWARZMAN: Okay. So the -- I'll
17 put out the letter here. The letter available for the
18 public is already on the front table, but for -- during
19 lunch.

20 And so we can adjourn early and gain some time
21 for lunch. You don't want to resume early, do you?

22 MS. HOOVER: No.

23 CHAIRPERSON SCHWARZMAN: Yeah. We'll just gain
24 some time for lunch. So we're going to reconvene promptly
25 at 2:25. The CDPH cafeteria I think, as most panelists

1 know, is right here outside the auditorium. And so that's
2 an easy, quick place to go.

3 And for Panel members, just a reminder to comply
4 with the usual Bagley-Keene requirements and refrain from
5 discussing Panel business during lunch and the afternoon
6 break.

7 So with that, we will convene the morning session
8 and break for lunch and reconvene at 2:25. If everyone
9 can be here and ready to go at 2:20, that would be
10 helpful.

11 Thank you.

12 (Off record: 1:01 p.m.)

13 (Thereupon a lunch break was taken.)

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

2 (On record: 2:28 p.m.)

3 CHAIRPERSON SCHWARZMAN: Okay. So we're going to
4 open the afternoon session. And I'm going to give just a
5 little introduction to this session before inviting up our
6 guest discussants.7 And so the goals of this afternoon's discussion
8 will be to hear a prospective from representatives of
9 county health departments on their experiences addressing
10 community inquiries and concerns about environmental
11 contaminants including metals. We want to identify some
12 of their most effective approaches for engaging with
13 communities about biomonitoring results and actions that
14 should be taken to follow up on those results.15 We want to look for ways that biomonitoring
16 California could share the expertise that's come out of
17 Biomonitoring's work, and collaborate with county health
18 departments on these topics.19 And so to start off this discussion, I want to
20 introduce three guest discussants. The first is Katie
21 Butler, who is a senior staff analyst at the L.A. County
22 Department of Public Health, where she manages the
23 Community Risk Reduction Program and the Toxics
24 Epidemiology Program. She has led some high profile
25 environmental investigations, including responses to

1 chemical fires, natural gas and oil releases, and metal
2 emissions from industrial facilities. She holds an MPH
3 from the University of Michigan, and is a board-certified
4 toxicologist.

5 Sara Cody is the Health Officer and Public Health
6 Department Director for Santa Clara County. As Health
7 Officer she has brought authority to protect and promote
8 the health of Santa Clara's 1.8 million residents.

9 Sara has initiated efforts to streamline and
10 integrate functions within the Department's infectious
11 disease programs to engage academic partners in helping to
12 address population health, and to articulate the distinct
13 role of local public health in safeguarding all resident's
14 health. She holds an M.D. from the Yale University of
15 School of Medicine.

16 And Karen Cohn is the Program Manager for the
17 Children's Environmental Health Protection Program at the
18 San Francisco Department of Public Health. Her program
19 proactively identifies and eliminates lead hazards to
20 children. And she's led special projects for the asthma
21 task force, including a pediatric asthma hospitalization
22 research study, a green cleaning in schools project, and a
23 bleach-free disinfection in child care centers project.

24 Karen created an environmental home assessment
25 that integrates social determinants of health that's meant

1 to ensure that vulnerable families have healthy housing,
2 and is currently conducting community outreach efforts
3 related to the restoration of the Hunters Point Shipyard.
4 And Karen holds a master's degree in environmental health
5 from the UC Berkeley School of Public Health.

6 So we have 10 minutes for each guest discussant,
7 and we'll start with Katie butler.

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

10 MS. BUTLER: All right. Thank you so much for
11 the opportunity to speak today to provide the county
12 perspective on addressing community inquiries to
13 environmental contaminants specifically, and approaches to
14 engaging the community.

15 So I'm going to walk through three case studies
16 of several environmental investigations that we're
17 involved with at the county level focusing on Exide
18 battery plant, chromium 6 response in the City of
19 Paramount, and then also Aliso Canyon I'll touch on
20 briefly.

21 So in the wake of these disasters, we have had to
22 think about how to build capacity to be able to conduct
23 environmental investigations. And I think the timing for
24 this discussion is very good, in light of the recent
25 capacity building efforts in L.A. County.

1 So just in the past couple of years, we've been
2 successful to test over 4,000 people in this area. And
3 that's been done by a variety of efforts.

4 First, we were pushing information out to medical
5 providers, and then we were hosting outreach events. And
6 now we've had very good success in actually a mobile van
7 approach, where we get our chairs, and canopies, and
8 tables, and we set up at areas like a basketball court,
9 for example, and we notify the residents in that area
10 prior to going out with fliers. And that's -- that's been
11 a good strategy for us to get people to come to the blood
12 lead outreach events.

13 And that's probably the number one effort in the
14 county right now that's most closely related to
15 biomonitoring work.

16 And, you know, it would not be possible without
17 the support of the WIC centers that distribute our
18 resources, and all of the other community-based
19 organizations that have really teamed up with us.

20 We also did another outreach campaign, where we
21 had 1,500 public health workers go out into the community
22 to distribute educational materials. So we -- we feel
23 like that has made a lot of -- you know, a lot of strides
24 in getting people to get the testing, in the absence of
25 being able to clean up their yards, so -- you know, being

1 able to do what we can as a health department.

2 And looking forward to 2019, I think we're going
3 to continue to ramp up going to more WIC centers, and
4 going to YMCAs, and, you know, giving people information
5 so that they can take more control over their own
6 situations, whatever it may be, to be aware of the
7 potential lead exposure.

8 And so, you know, just the sheer size and the
9 area of contamination here has presented significant
10 challenges for all of the agencies working on this
11 project.

12 --o0o--

13 MS. BUTLER: The second case is a case of
14 hexavalent chromium emissions from metal facilities in the
15 City of Paramount. And this was brought to our attention
16 two years ago actually in the form of a proposition 65
17 advisory letter from our local air agency that notified us
18 a metal facility was emitting hexavalent chromium at
19 levels 400 times higher than any other area in L.A.
20 County.

21 So that puts the estimated cancer risk on the
22 order of, you know, between 1 in 100 and 1 in 1,000. So
23 we're dealing with very high levels of hexavalent
24 chromium. And originally started off as two facilities
25 that were identified. And then once all of the agencies

1 came together, you know, air agency, fire agency, our
2 health agency, we -- and the local city, we identified
3 over 80 facilities that could be potentially emitting any
4 kind of metal, possibly including hexavalent chromium just
5 in this city alone.

6 And it's a very mixed industrial/residential use
7 landscape here. So you have metal facilities located
8 across the street from homes, in some cases, and, you
9 know, 500 to 1,000 feet from schools.

10 So all of the agencies immediately kind of came
11 together to figure out how can we strengthen the, you
12 know, regulatory requirements for hexavalent chromium
13 emissions, because there really are no air standards for
14 hexavalent chromium, and the local air rules were lacking.

15 So after several abatement orders from the air
16 agency, we issued our own public health directives to
17 seven of the facilities. The facility emissions they have
18 reduced substantially over the last two years. They're
19 still not where we would like them to be, but we've gotten
20 a lot of questions from the community about, you know,
21 what have I been exposed to, can I test for the hexavalent
22 chromium in my body? You know, we're not aware of any
23 kind of hexavalent chromium test that would be useful to
24 people, so we're not able to recommend any kind of
25 biomonitoring in this case.

1 But the point is that those questions do come up
2 frequently. And, you know, we are normally focused on the
3 environmental data. What do the environmental data tell
4 us about potential exposures. And we usually lead our
5 actions based on that environmental data.

6 In this case, you know, the air agency was
7 monitoring very heavily for all of the contaminants,
8 mainly hexavalent chromium, in air, but it left a lot of
9 data gaps with respect to indoor air and soil. And so
10 that's where our health department was able to do some
11 sampling relatively quickly to rule those media out as
12 concerns.

13 And so it ended up that hexavalent chromium in
14 outdoor air remains the main concern. The levels in soil
15 were low. And then the levels in indoor air, we actually
16 didn't find any above reportable quantities. So it really
17 left -- it was good, because then we were able to guide
18 our efforts. Okay. We're going to focus on the outdoor
19 air. And we can now answer people's questions when they
20 ask us about growing produce or indoor school air for
21 example.

22 --o0o--

23 MS. BUTLER: Lastly, Aliso Canyon natural gas
24 disaster. Largest natural gas release in U.S. history.
25 It left thousands of people and two schools relocated. In

1 late 2015 is when the well SS25 began releasing natural
2 gas, and what we've come to learn now, contained crude oil
3 as well. For four months the well was releasing the
4 uncontrolled gas.

5 And the point that I want to make with regards to
6 Aliso Canyon are the communication challenges regarding
7 exposures and what people may still have in their body.
8 We still get questions from the public today about what
9 have I been exposed to, what is still in my body, how do I
10 detox my body? These are common questions that we get.

11 And we, you know, have consulted our colleagues
12 in the academic institutions to see is there any
13 biomonitoring testing that we should be doing? And the
14 consensus is that, you know, there's no biomonitoring at
15 this point in time that would be helpful, especially most
16 of the chemicals were transient in nature. They're
17 volatile. So, you know, benzene testing, for example, at
18 this point in time, you know, wouldn't tell us anything
19 useful.

20 But at the same time, we have medical -- a
21 medical professional in the community who's doing his own
22 testing for benzene and blood. And so it's been very
23 challenging as far as getting the scientific information
24 out to the public. And I think that challenge will
25 continue as we launch a health study. We are expecting

1 \$25 million in funding, as soon as the court approves the
2 settlement. That was agreed upon. And that's expected to
3 occur any time in the next couple months.

4 --o0o--

5 MS. BUTLER: Here's the -- a map of the Aliso
6 Canyon symptoms that were reported during the incident
7 itself. And this is showing a five-mile radius. So each
8 mile increment on the map -- and it shows how the majority
9 of complaints, or symptom reports, did occur in the Porter
10 Ranch area, but other areas were also impacted surrounding
11 Chatsworth, Granada Hills.

12 And it was very irregular as to how the symptoms
13 were reported. And that was due largely because of the
14 geographic nature. It's very hilly in this area. And
15 during the -- during the disaster itself, you know, a lot
16 of the symptoms were co-located with odor reports, with
17 mercaptan, the natural gas odorant being the known cause
18 of many of the symptoms.

19 But we were left with some unanswered questions.
20 We did have a lot of nose bleeds being reported. And to
21 this day, nose bleeds are still reported. And from our
22 research of mercaptan, nose bleeds wasn't something that
23 we could verify as being caused by the Mercaptans.

24 And so, you know, that's another reason why we
25 felt this long-term health study was so important to be

1 able to help answer some of those -- those health
2 questions people have.

3 And this -- this symptom map here, just again
4 kind of illustrates the large geographic area, many
5 different communities that our public health department
6 had to, you know, communicate with and will have to
7 involve as the study -- as the study is launched.

8 And our role for this study, we really intend to
9 just facilitate a community-led effort, so that they can
10 really take ownership over the study itself.

11 --o0o--

12 MS. BUTLER: So after going through, you know,
13 these disasters and other incidents that we've encountered
14 the last few years, we've been very fortunate to get
15 support from our local board of supervisors -- our county
16 board of supervisors to continue to build capacity in the
17 area of environmental monitoring and surveillance. And we
18 really have a focus on empowering the communities that are
19 most vulnerable and really trying to focus our efforts in
20 certain areas that experience cumulative exposures with
21 multiple burdens. With a county as large as L.A., 11
22 million people, we've used that strategy to kind of focus
23 our preventative monitoring and surveillance efforts.

24 --o0o--

25 MS. BUTLER: So thank you again.

1 (Applause.)

2 CHAIRPERSON SCHWARZMAN: Thank you very much
3 Katie.

4 We're going to have all three discussants present
5 and then we'll have a chance for questions, and then we'll
6 have a little break, and then we'll have a discussion, so
7 you know what's coming.

8 So Sara Cody.

9 DR. CODY: Good afternoon. I don't have slides
10 for you. Again, I'm Sara Code. I'm from Santa Clara
11 County.

12 I am probably the only person in the room that
13 does not have environmental health expertise or
14 background. And so I think that's why I'm here to give
15 you really the layperson's perspective on what this looks
16 like.

17 So I'm a general internist by training, and I
18 have a very broad role for the County of Santa Clara,
19 which is the Health Officer. And what I wanted to
20 emphasize is a little bit about how local health
21 departments are structured, and that we're all structured
22 very differently. And I think it's helpful to understand
23 that and think about that when you think about this very
24 intense work that's done in biomonitoring and then think
25 about how can that be received and used by the local

1 health departments.

2 So Santa Clara County, as you may know, it's --
3 we're the fourth largest county. We have two million
4 people. And when you look at one -- there's an adage that
5 says when you've seen one local health department, you've
6 seen one local health department.

7 (Laughter.)

8 DR. CODY: And we're structured quite differently
9 than my colleagues from L.A. and San Francisco. And I was
10 getting a little jealous over lunch. We -- our public
11 health department sits in a completely different part of
12 the county organization from the environmental health
13 department. We work very closely together every day, but
14 we report up -- our reporting structure doesn't really
15 intersect till we get to the county executive.

16 And just to give you a little bit of the sense of
17 the kind of expertise that lives in environmental health,
18 and in public health. In public health, we're very rich
19 in infectious diseases. And our health officer team of
20 six, two of the six are ID physicians in fact. I'm a
21 general internist. We don't have anyone with any
22 occupational or environmental health.

23 We have lots, and lots, and lots of nurses. They
24 work in maternal child and family health. They're
25 excellent at connecting to community resources, providing

1 support in breast feeding, and in nutrition. And no
2 background or grounding in environmental health.

3 In chronic diseases, lots of funding and focus on
4 tobacco and obesity. And a little sliver of work on
5 climate change. But there's not an environmental justice
6 group in chronic disease.

7 We have in our environmental health department,
8 lots of work on food safety, regulation. There's a little
9 bit of work in hazardous materials, but it's really about
10 site mitigation, quite precise and quite specific.
11 There's a little bit of work funded by the Childhood Lead
12 Poisoning Prevention Program, an environmental health
13 specialist that does it, but again, no broad area.

14 So essentially in our county, we do not locally
15 have the resources or expertise to understand and evaluate
16 the human health effect of environmental contaminants, be
17 they from soil, water, or air.

18 So we are completely dependent on understanding
19 and knowing where to go for technical expertise and
20 resources, and really understanding State, federal, local
21 jurisdictions, and it's enormously complicated. So I just
22 wanted to give -- to give that background, because that's
23 what it looks like in Santa Clara County.

24 We don't have environmental health concerns that
25 come to us every day. They really kind of come in fits

1 and starts. So it might be a couple times a year or there
2 might be quite a bit of time that goes by with nothing.
3 But I wanted to give a couple examples of the types of
4 issues that come -- that do come to our attention and be
5 honest about how we struggle with them and what we do.

6 So I remember -- I've been at the county for 20
7 years, and I remember very distinctly the very first time
8 it was Thanksgiving day in the late 90s, and I was the
9 health officer on call. And I got a call, they had closed
10 Highway 17, because of a hazardous materials spill. And
11 the battalion chief on scene wanted the health officer to
12 come and declare it safe to open.

13 And I'm really good a diarrhea outbreaks --

14 (Laughter.)

15 DR. CODY: -- but this was not something I
16 thought, well, I could bring a match and light it and see
17 what happened.

18 (Laughter.)

19 DR. CODY: You know, I really didn't know. So
20 just I thought I would open with that.

21 Several years later, we had widespread
22 contamination of drinking water in south county with
23 perchlorate. I was the health officer at the time, and I
24 really had -- I mean, I remember sitting in a room and
25 speed reading papers and getting on the phone to see who

1 could help us, because we were going to be the people that
2 were going to be up front at the community meeting
3 answering questions, and we felt quite uncomfortable.

4 Just -- there are many other examples. But the
5 one that I wanted to tell you the most about was about two
6 years ago, we had a report of -- that came in through
7 pesticide reporting of a man who came into an emergency
8 department with some symptoms of organophosphate
9 poisoning. This report came to our communicable disease
10 group, because that's the group that we have to handle
11 pesticide reports. And it also came to the county
12 agricultural commission.

13 But it was a very long time before all of the
14 paths intersected to really understand what was going on,
15 because the county ag commissioner was focused on the fact
16 that this was illegal and not approved for use in the
17 United States, and what did that mean. And he was
18 consulting with his counterparts at the State and the
19 Department of Pesticide Regulation.

20 On our side, there were a couple misses,
21 including having been reported to the wrong county first,
22 and then getting back an electronic data system that
23 wasn't working very well back to us.

24 So a long time passed before the right people
25 were on a conference call, at which time we recognized

1 that the gentleman that had been -- that presented with
2 poisoning had actually lived in an apartment complex where
3 an exchange for a reduction in rent, he was acting as a --
4 sort of like a grounds manager. And because they had had
5 a lot of issues with rodents and bed bugs, the owner had
6 asked him to use this special stuff that she got from a
7 relative in Nigeria to take care of the bed bugs and
8 roaches.

9 And the label stated that it was just for outdoor
10 use. I don't know what the regulatory situation in
11 Nigeria is, but this is -- it was dichlorvos. And he had
12 been using this indoors in large quantities applying it to
13 a upholstery, baseboards, bedding, near kitchen areas.

14 And during the course of the conference call, I
15 asked, well, who lives in these buildings? And it
16 eventually came out that it was -- that our public
17 guardian can serve -- county can serve patients, people
18 who were living in these buildings as well as our
19 behavioral health department had people under their care
20 with severe mental illness, who were also living in these
21 buildings.

22 And that -- and the -- the land -- the woman who
23 owned the apartment complex has had six different
24 buildings. And this gentlemen had been at all different
25 buildings. So we, as a county, then we had public

1 guardian, environmental health, public health, behavioral
2 health, county counsel, et cetera, et cetera, et cetera,
3 but nowhere in our group did we have expertise to
4 understand what the health risks were.

5 And I'm the health officer, so they were asking
6 me, Dr. Cody, what do we do? What does it mean? Who's
7 been exposed? What's an exposure? Should we be rehousing
8 these people, et cetera, et cetera?

9 And I just want to make the point as far as the
10 complexity of understanding where to go for resources, it
11 took me quite a long time to understand who I could access
12 for expertise, because we have no toxicologists. And
13 ultimately, we were getting slightly different opinions
14 once we did involve experts.

15 So my -- there's -- my -- what I really want to
16 communicate is that when you get down to the -- where the
17 rubber hits the road, we have a lot of work to do in
18 understanding how to optimally organize. And when we have
19 environmental concerns that aren't -- we don't sort of
20 have a continuous stream of need, it's more in fits and
21 starts, I think that the resources that we most need is
22 someone who's a really fantastic project manager, as well
23 as a map to wear the resources are.

24 Sometimes the -- the inquiry comes in in
25 different ways. And interestingly, it frequently comes

1 into the folks that answer the phone at the front desk --
2 so the phone numbers that are listed on the public health
3 department website.

4 So I think -- I guess in closing, other than
5 poaching from other counties, which I've already got some
6 great ideas for how to poach expertise from other counties
7 and import them to Santa Clara County, I think that just
8 thinking about -- just recognize that the expertise and
9 what you all think about every day probably doesn't exist
10 in most county health departments.

11 And so part of the challenge is knowing that even
12 though the public is going to those county health
13 departments, those county health departments probably
14 aren't going to be able to respond. And so unless it's
15 extremely clear and extremely easy where to go when for
16 what, that a lot of opportunities could be -- could be
17 missed.

18 And now I'm going to turn it over to Karen, who
19 I'm going to poach.

20 (Laughter.)

21 (Applause.)

22 CHAIRPERSON SCHWARZMAN: Thank you.

23 Thank you. Karen Cohn from San Francisco
24 Department of Health.

25 (Thereupon an overhead presentation was

1 can require certified people to fix it and so on.

2 And we're part of the ten jurisdiction lead
3 litigation that's about to award millions of dollars all
4 over the state to be spent in a four-year period, which
5 means the paint companies want it back at the end of the
6 four years.

7 But anyhow, the green dots here are blood lead
8 levels as a heatmap. And so, you know, again, it's where
9 they're not rates, but they are where a lot of children
10 live in those districts, and also the dis- -- I mean, all
11 the districts are old enough. But on the east side of the
12 city is a little more wood, on the west side of the city
13 is a little more stucco.

14 So it's generally wood that was painted with lead
15 point. And that's our big biomonitoring project there.

16 --o0o--

17 MS. COHN: Also, on the left as far as community
18 concerns, gardening has been a big concern. There's been
19 a lot of civic activity and legislation to promote
20 gardening in San Francisco as a food source, and as a
21 micro-business, and to let people get through all the
22 Permitting and all that.

23 And our health department started this garden on
24 the left as a place for homeless and housed people to work
25 together as a community. And they took a few little soil

1 samples, and said, okay, it's not contaminated.

2 And then a friend from one of these programs in
3 the State came by, and said did you see that building
4 on -- and the peeling paint was visible from Good Earth.

5 (Laughter.)

6 MS. COHN: It was like hanging off the building,
7 ready to fall into the brand new garden. And so we had to
8 do a little more emergency stuff with our HUD grant at the
9 time. And before all this was planted, it got fixed.
10 And -- but, you know, it caused a lot of waves. People
11 were very unhappy, because we're like interfering with our
12 own department's program. And they had already tested the
13 soil. So it was really -- it gave me the idea of what's
14 the difference between thinking about risk and thinking
15 about contamination, and that our health partners or our
16 public doesn't really know the difference.

17 And so we said the risk is right there. It's
18 about to be washed down in the next rain. The
19 contamination was which dots of earth you happen to pick
20 up, and whether they were the right dots of earth.

21 So I think that sort of helped inform us that we,
22 from that point, created a guidance for setting up your
23 gardening, always about imported soil, where you get the
24 tested imported soil. We've just had our first case that
25 had to do with somebody with chickens in their backyard

1 where the soil was contaminated.

2 So about -- I mean, again, most children don't
3 have access to bear soil. But when we test it, at least
4 half of it is above the State's childhood lead poisoning
5 standard 400 parts per million. And if we use the OEHHA
6 standard of 80, which we're trying to put into our code,
7 over 86 percent would be failing. So it's there.

8 --o0o--

9 MS. COHN: We've had several cases having to do
10 with consumer products such as meds and herbal medicines,
11 and ayurvedic. And we wrote a newsletter that we shared
12 with other counties. It's a real big problem for the lead
13 program in Alameda and Fremont in particular.

14 We've had an adult case where somebody had
15 advanced kidney disease and was also having poisoning from
16 their ayurvedics and somebody published a paper at
17 Stanford related to that.

18 And then when I started looking at it to write
19 the newsletter, it's the most widely used medicine all
20 over Asia. It's a huge concern of the World Health
21 Organization, how to figure out whether -- you know, some
22 of the products have metal in them on purpose, and some
23 are just contaminated. So they really haven't figured it
24 out.

25 India did start some testing of products, but the

1 levels they were looking for were too high for us. So
2 that's sort of an ongoing concern for education.

3 --o0o--

4 MS. COHN: Let's see. The other thing in
5 researching to present to you today is I'm thinking where
6 is the community need? And I got so many different ideas
7 about reproductive health through that search that I just
8 felt, at the end of it, we have no cohesive strategy to
9 counsel people about toxicity and reproductive health.

10 There was this study from 2010, where there's an
11 association with lead in cadmium, reproductive hormones in
12 pre-puberty for girls, where it's slowing things down.
13 And there were never any follow-up studies. There was
14 not -- it's like it's not part of our counseling to
15 patients or anything.

16 This one in the middle Little Things Matter is
17 Bruce Lanphear. He's a leader in lead research. He's now
18 in, I think, Vancouver. And he said in this little video
19 that England had like a tiny bit of lead in the female
20 population. And when they were able to reduce that, the
21 pre-term births went down. Like, you know, an
22 association, but like that on a population basis, these
23 are significant issues for reproductive health.

24 And I know we have the UC pre-program that has
25 this pregnancy exposure center that you probably have

1 worked with with your biomonitoring studies. But -- so
2 again, if little girls get lead poisoning and it's enough
3 to be stored in their bones, and it's a 20-year half-life,
4 and now they're having children as it's going to get
5 migrating out of their bones. That's all very well
6 studied in the literature, but we have no cohesive
7 clinical guidance, no doctor ever asked you had you been
8 lead poisoned as a child now that you're here as my
9 prenatal patient? I mean, none of that has ever been
10 connected.

11 So I do think it's an area of research for you
12 all to consider what is the reproductive health cycle? I
13 know there's been youth projects about cosmetics and about
14 reducing metal in cosmetics. But this really touches on
15 very many stages of life, as the metals come out of the
16 body. It's also a problem for I think osteoporosis and
17 alzheimer's now too to see lead coming out of the body
18 later in life.

19 --o0o--

20 MS. COHN: So my particular experience now is I'm
21 doing a lot of outreach related to Hunters Point Shipyard
22 because of the fraud that happened from the Navy's
23 contractor in measuring radiation. It's a highly educated
24 community that's experienced a lot of environmental
25 justice issues. Very, very heightened sensitivity about

1 issue that are out of your own control.

2 There's been serpentine rock asbestos issues
3 there. There's this radiation monitoring. This little
4 deck marker was just found in the soil a foot down, you
5 know, not an exposure concern. But just -- there's enough
6 that goes wrong at this site that people are really
7 completely untrusting of any type of government source of
8 information. And they've hired their own experts who are
9 not really credentialed to be experts.

10 So I feel that if biomonitoring was to fit --
11 this community has asked for biomonitoring. There's a
12 widespread belief that the health disparities of Bayview
13 Hunters-Hunters Point are related to environmental
14 exposures, and in particular to the shipyard as an
15 exposure source, even if people don't have an exposure
16 pathway from the shipyard to themselves, the -- when I --
17 when this deck marker was found, a nurse even asked me do
18 you think this could be a reason for the excess breast
19 cancer in our community?

20 So I'm just saying that the whole public
21 understanding of exposure and just the journalists'
22 understanding of these scientific issues that they're
23 covering is very poor also. And it's all been very
24 sensationalized. So I just -- if biomonitoring -- if you
25 had enough resource, and it was coming to us, we would be

1 asking you to do studies here.

2 I also feel there's a big gap in what people's
3 understanding and resource to go to for environmental
4 causes and associations of cancers -- of various cancers.
5 It's not like you just go to the encyclopedia and -- you
6 know, like summer are very obvious. Like benzene causes
7 X. But breast cancer, what would I be biomonitoring for?
8 What would be the community's belief of what I should be
9 biomonitoring for?

10 So anyway, that is an ongoing issue. I've talked
11 to about 700 people related to the shipyard.

12 --o0o--

13 MS. COHN: Also been involved with air quality
14 stuff. And that's another place where people know that
15 they've been exposed, particularly if they live in the
16 blue zone. This is a combination of these purple dots,
17 which are stationary permitted sources by the air
18 district, traffic modeling, area sources like the port and
19 the train station. And it's both cancer-causing, like
20 toxic air contaminants, as well as particulate matter.

21 Those are our risk areas. It relates to a law we
22 have that's for building new residential or sensitive use
23 buildings. And that blue zone requires a specialized
24 filtered air system. You have to prove MERV 13 filtration
25 or the equivalent. So it turns out this whole south of

1 Market area -- I'll show you the pictures of what used to
2 be built.

3 --o0o--

4 MS. COHN: So my friend lived right -- a couple
5 blocks on a leafy street near the train station. And this
6 was his little allergen fabric he put on his air intake.
7 He had to change it every month, because of the soot
8 coming from construction, and the trains. And that whole
9 community is again very up in arms, very well educated,
10 very -- a lot of advocacy. And the train -- Caltrain
11 changed management to a company out of Missouri and Texas,
12 and they stopped using the electrification that had been
13 put in for the idling. Like something broken, they didn't
14 fix it.

15 And then all these people were being woken up all
16 night. They had all this soot. So these are the types of
17 issues that come in. And this other one is -- on the
18 bottom left is just built across from the freeway and the
19 Muni yard. And the only thing separating the air from his
20 unit is a metal grate, so that rocks don't fly in.
21 There's nothing. And he has somebody clean soot off his
22 shelves every week. You know, he has a house cleaner.

23 --o0o--

24 MS. COHN: The last is wildfires. Because we
25 have these large construction projects on the Hunters

1 Point area, there's Candlestick, and the shipyard itself,
2 and then the Alice Griffith Project that got rebuilt, we
3 have perimeter air monitoring for both asbestos and for
4 PM10.

5 And so we could really see the difference in the
6 week of the fires last year. And these graphs were the
7 evidence of that, as far as like what we were all
8 experiencing, what was coming into the air intakes of our
9 office buildings. I had to run air filters inside my
10 office for the staff to be present.

11 It is really hard. And I know that was even more
12 so if you were in Santa Rosa. But it was a big effect
13 here. So I think that's something to prepare for maybe
14 from a biomonitoring point of view also.

15 --o0o--

16 MS. COHN: I think that's all. As far as other
17 things that came up for me while people were talking, I
18 felt there should be sort of a career development aspect
19 of working with partner -- community partners, because the
20 findings are most listened to when they come from a peer.
21 And I've been in a position of being on a biomonitoring
22 study with mercury with some of the partners here.

23 And by the time I got to that woman, the baby had
24 already been born, the study started when she was
25 pregnant. The baby had already been breast fed for a

1 while. I told her all about face creams through a
2 language interpreter. No click, nothing. It did turn out
3 to be a face cream that was compounded in Mexico, and
4 brought by her mother and given to her as a gift.

5 So I just think the messenger counts a lot. I
6 mean, the person wasn't trying to be evasive to me, but I
7 just think whatever I -- illustration I showed or whatever
8 I talked about is irrelevant, unless maybe there's a
9 companion message coming from within the community. And
10 also, it's a way of interesting like young adults into
11 going into this career to sort of train them to share the
12 findings, or to create the incentives for these people
13 whose phones change a lot to call in on a certain date.
14 But to be that sort of community ambassador, I think
15 there's a role to play for that.

16 CHAIRPERSON SCHWARZMAN: You think we might do --
17 sorry, if I could interrupt you for just a second. We're
18 going to have a whole discussion --

19 MS. COHN: Oh, I'm sorry.

20 CHAIRPERSON SCHWARZMAN: -- and these are
21 wonderful thoughts.

22 MS. COHN: Okay.

23 CHAIRPERSON SCHWARZMAN: Maybe we'll -- please
24 keep them and it --

25 MS. COHN: Oh, from this thing, sure.

1 CHAIRPERSON SCHWARZMAN: -- will trigger lots of
2 discussion.

3 We have ten minutes now for questions for each of
4 the three discussants --

5 MS. COHN: Go ahead.

6 CHAIRPERSON SCHWARZMAN: -- so don't go too FAR
7 away. So if all three discussants -- presenters could
8 come closer, we have 10 minutes for questions about the
9 presentations, and then we'll break, and then we'll have a
10 full discussion. That will be great.

11 So while you're coming down, thank you all for
12 your very thought-provoking presentations. And I'll start
13 with a question just as the Panel is getting organized for
14 Sara. I'm wondering what your relationship is with
15 CDPH? So this is just my ignorance. I don't know what
16 the county health department -- how the county health
17 departments relate to CDPH and what that pipeline is like
18 for expertise and access to information.

19 DR. CODY: So thank you -- thank you for the
20 question. We have a fantastic relationship with CDPH, and
21 we're really good at accessing resources for content areas
22 that we know and work in. It gets harder when there's a
23 content area where we don't work in very often, because we
24 don't know the network.

25 And so just as an example, in the case of the

1 pesticide -- the illegal pesticide use, when I was having
2 a hard time figuring out where to go and who knew what, I
3 contacted someone with whom I had a relationship, because
4 he used to work in immunizations, and then he was my
5 guide, and then I was set.

6 But I needed a guide. I needed a navigator. So
7 great relationships with CDPH, but a little bit of lack on
8 our end of just readiness to know how to access resources
9 and content areas where we don't work frequently.

10 CHAIRPERSON SCHWARZMAN: Thank you.

11 Other questions from the Panel?

12 Yeah, Tom.

13 PANEL MEMBER MCKONE: I wanted to -- maybe this
14 belongs more in the discussion part, but I didn't want to
15 bring up a question related to air cleaning. And it's
16 interesting, because it's probably not biomonitoring, and
17 it comes up both -- I mean, in the concern about San
18 Francisco and air quality. But it also came up in a Aliso
19 Canyon.

20 And, you know, one of the things I was
21 fascinated -- I was involved in looking at some of the
22 issues related to Porter Ranch residents. And I was quite
23 interested to see that the gas company was required to
24 provide air cleaning units. And then I looked further,
25 and they actually -- the air cleaning units were

1 recommended by the Air Resources Board and they actually
2 did a good job. So I have an air cleaning background and
3 worked on indoor air quality.

4 So they really recommended the right kind. But
5 what concerned me was it didn't look like there was any
6 follow up to make sure people knew how to use these units.
7 And so, you know, one of the problems is there's some -- I
8 don't want to mention product names, because we're on --
9 we're live, but there are a couple of products out there
10 that really work. And they really work because, A, they
11 move a lot of air and you've got to move a lot of air, and
12 you've got to have the right kind of filter.

13 Or in the case of Aliso Canyon, because of the
14 compounds, you probably need a filter with activated
15 carbon and probably permanganate or some other material,
16 because there's two different kinds.

17 So it was very good, but what I would -- you
18 know, and this is like I say kind of a biomonitoring or
19 exposure monitoring is these things have to be tracked,
20 right? You have to make sure people know how to use them,
21 and then actually take samples to see if it's mitigating
22 the way it should.

23 And the same issue is true. There's been some
24 really good work now about how to protect residences from
25 wildfire smoke. And like MERV 13, which is now the state

1 recommended -- the building code is going to insist that
2 requiring furnaces to all have a MERV 13 filter. But
3 again, if you don't run it, and if you don't seal up your
4 windows, it doesn't work right.

5 So just a little insight about is there efforts
6 to sort of not only provide this information, but
7 resources so people know how to use these mitigations, and
8 then maybe later on we can do the exposure biomonitoring,
9 to see if it really is making a difference. But, you
10 know, it's a different question.

11 MS. COHN: I have direct experience with the
12 research project for indoor air quality filtration. We
13 had a settlement from a power plant that was closed,
14 Mirant power plant, and we worked with Lawrence Berkeley
15 Lab as the evaluator.

16 PANEL MEMBER MCKONE: That's my group.

17 MS. COHN: Indoor air quality group, so you know
18 Brett.

19 PANEL MEMBER MCKONE: Brett used to work for me,
20 but I'm retired.

21 (Laughter.)

22 MS. COHN: Right. There you go. And different
23 agencies, including the air district. And we did a
24 retrofit of four private homes in Bayview Hunters Point
25 that had furnaces, and we retrofitted them with a MERV 13

1 new furnace and all that.

2 And operator error in broad terms is the biggest
3 barrier to the effectiveness of that. Thermostats are
4 very difficult for people now. They're programmable.
5 People don't understand that they like on and off. We had
6 mostly elderly residents. We had people who burn candles
7 and incense. You know, we had a lot of different things.
8 We also replaced bathroom and kitchen fans and things like
9 that.

10 But I would just that what we learned from the --
11 trying to put in better furnaces for people who lived near
12 busy roadways is that the -- they were low-income. They
13 were not used to using their heat. They could not afford
14 their heat. And to run -- to even give them a thermostat
15 where they could run the fan by itself without the heat
16 was still a barrier, because they could not operate the
17 thermostats. So that was definitely a barrier.

18 Then we switched to doing four condos above the
19 Whole Foods in Potrero Hill, where they have lots of
20 deliveries, and lot truck idling, and stuff like that.
21 Half the people who volunteered were research scientists
22 of indoor air quality.

23 (Laughter.)

24 MS. COHN: They already owned air filers and we
25 measured the effectiveness of adding portable air filters

1 to their units, and that was also effective.

2 They both were effective at the whole measurement
3 stuff that Lawrence Berkeley Lab was doing, and it's
4 written up and published on our asthma task force website.
5 There was a self-published study. So that's
6 sfgov.org/asthma.

7 Yeah. So, yeah, it's -- they're both good
8 strategies, but they do require operator things. And then
9 even with the -- I've given away quite a few portable air
10 filters to asthma and COPD patients. And I don't know if
11 they can afford the replacement filters, either for the
12 charcoal, which is four times a year, or for the -- the
13 HEPA part of it, when it comes around. We always give
14 them one year of replacement. But are they going to open
15 it? Are they going to put it in the right way. It's very
16 hard to know. Yeah, it's a difficult question.

17 CHAIRPERSON SCHWARZMAN: We probably have time
18 for one more question.

19 Oh, you want to add.

20 MS. BUTLER: Just really quickly with respect to
21 the Aliso Canyon disaster and the use of air filtration.
22 We did survey people in the CASPER. The rapid survey we
23 did with partners from Environmental Investigations Branch
24 here, and we did survey people asking them about their
25 frequency of use of the air filters, whether it was the

1 portable, or whether -- the gas company was also offering
2 in-unit filters. So different kinds of filters were out
3 there.

4 And we tried to tease apart, you know, what kind
5 of filters were being used, and then if that could predict
6 people's reporting of symptoms. And we did not find that
7 it -- that it could predict the reporting of symptoms.
8 But we did try to look at that, because that is an
9 important follow-up evaluation type question. Especially
10 for something in the case of Aliso, where when we worked
11 with the Air Resources Board, you know, we did identify
12 the best type of filter we thought would be advantageous
13 for people, but we still -- we could not say for sure
14 whether it would eliminate the odors just because of
15 everyone's own individual different use patterns of their
16 homes keeping doors open and such, so...

17 CHAIRPERSON SCHWARZMAN: Any other questions,
18 Panel or audience?

19 Well, we'll have a chance for a full discussion
20 after a break. So we will break for 15 minutes now, and
21 start again at 3:35. And I just want to mention to the
22 panelists that there's going to be a table rearrangement
23 during the break, so consolidate your belongings, unplug
24 computers, close computers, put your bag on your chair or
25 something so that staff can easily move the tables around.

1 MS. HOOVER: And I'll just say that Nerissa has
2 generously donated some snacks for people and those are
3 going to be out in the back table behind the auditorium.

4 CHAIRPERSON SCHWARZMAN: Okay. So we'll now
5 break until 3:35.

6 (Off record: 3:19 p.m.)

7 (Thereupon a recess was taken.)

8 (On record: 3:35 p.m.)

9 CHAIRPERSON SCHWARZMAN: Okay. So we are going
10 to open the afternoon session. I've had to figured out a
11 new mic, so that's working, right?

12 Just when I was comfortable with it.

13 Okay. So this is our chance for discussion with
14 our discussants -- with our guest discussants, and the
15 audience, and the Panel. Is there a slide Sara that has
16 those discussion points.

17 MS. HOOVER: No, we're not showing slides.

18 CHAIRPERSON SCHWARZMAN: No. Okay. So maybe I
19 could just reiterate the discussion points. Part of the
20 reason -- there's lots of reasons to hear the county
21 health department perspectives, but to articulate some of
22 them. You know, we got the chance to hear about their
23 experience working directly with communities and
24 addressing community inquiries and questions about
25 environmental contaminants including metals.

1 And so our questions now are to think about how
2 to productively engage with communities about
3 biomonitoring results. And, in particular, what
4 communities always ask, right, is what to do about the
5 findings? And so those are always hard questions to
6 answer. And I think Biomonitoring California has enough
7 experience now with results return. And we heard this
8 morning from Nerissa about some of how it's going with
9 ACE. I think it was Nerissa who talked about that results
10 return. Anyway, that there may be some expertise that's
11 helpful to county health departments there, and also for
12 ways that Biomonitoring California can collaborate with
13 county health departments and perhaps get help about the
14 community resources that you all know and depend on for
15 reaching communities members. I was interested to hear
16 about WIC -- reliance on WIC for a way to distribute
17 information. It's a great idea.

18 So anyway, the information I'm expecting will go
19 both ways. And we can think about it through the lens of
20 metals. And it's something that each of you has touched
21 on -- each of our discussants has touched on, and it's the
22 main topic for today's Panel meeting. But, of course,
23 that's not to exclude other environmental contaminants or
24 discussion of that.

25 And I think air pollution is a common theme also,

1 that's common between biomonitoring studies and often the
2 concerns that communities raise -- and community members
3 raise. And particularly looking at the map of the
4 affected areas in San Francisco, right, that tracks the
5 freeways and point source.

6 So maybe that's enough prompting of the
7 discussion. And I'll open it up to Panel Members. If no
8 one has a burning thing to start with actually, I might
9 return to your list of thoughts, because you had a nice
10 list of thoughts that I unfortunately interrupted to stick
11 with questions. But maybe that's a good place to start.

12 MS. COHN: There we go. Fine. Okay. So we
13 started working with WIC in order to do proactive lead
14 investigations. Once, like 2003, we know that low levels
15 of lead are just as dangerous, we needed to have an
16 outreach method. So that program is not allowed to give
17 away their addresses, but they would -- we would go -- we
18 go to their office and they print out mailing labels, and
19 we bring our envelopes, and we have a mailing party.

20 And so we've done that a number of times. We can
21 do it by zip code, by language and so on. And it allowed
22 us to go into a few hundred homes at once. And it allowed
23 us to explore a whole new path, which is housing
24 insecurity. But I think that it's -- we have the luxury
25 of being a combined city and county. But even if I was a

1 county health officer, you could still have that
2 partnership with various cities and their WIC programs.

3 So we broadened it from there, all maternal child
4 health programs have the ability to refer into us for home
5 visiting. So the public health nurses who are in several
6 programs, they see newborns. They, you know, do lactation
7 consults. They also are in the research based work of
8 family nurse partnership. They all refer into us also.
9 And those are probably the worst homes, like the ones
10 where -- like the parent is very motivated to make change.
11 They're willing to take the risk in our rental market to
12 make waves with their landlord, just because they really
13 care.

14 And so that was really my last point was that in
15 the ACE and the BEST when you saw those results, and some
16 people didn't necessarily want to change their behavior or
17 find out what this mercury was about, on whatever, perhaps
18 extending the testing to their -- the rest of their
19 family, to their children would be more of a motivator,
20 because people are willing to change things and take risks
21 to protect their children. So we just see a lot more
22 motivation in that regard.

23 But I'd say that anything related to housing
24 sources is very vulnerable right now. Code enforcement is
25 a very vulnerable tool, because all throughout our state

1 people have too insecure a housing situation to take the
2 risk of using code enforcement. There's even a drop in
3 WIC enrollments because of all the immigration policy
4 issues.

5 So let me see what else I can pull in. I thought
6 the -- I had youth interns in this last summer that were
7 like community college level students. And I think they
8 easily could have been trained to help communicate some of
9 these results that are from your studies. And it's --
10 what I've really been told by these community agencies
11 that do these internship programs is until they meet
12 people in these careers, they don't know these careers
13 exist. They don't know which courses to study in school.
14 They just -- you know, they don't have a path forward.
15 There's no community experience to guide them.

16 So my job was to introduce them to environmental
17 health careers, and to public health in general. And the
18 thing that they got most excited about was the cannabis
19 awareness campaign that was being planned for youth. And
20 they helped inform the messaging quite a bit. But I also
21 think that's an area for biomonitoring. Our health
22 department published a health impact assessment about
23 cannabis legalization. And there's a concern about the
24 normalization and the youth and child exposure.

25 So I don't know if that is within the domain of

1 biomonitoring, but there will be a lot of money and a lot
2 of cannabis industry people that want to give money to
3 make their industry feel like a good partner.

4 CHAIRPERSON SCHWARZMAN: I know that pesticide
5 contamination is one --

6 MS. COHN: Yeah, pesticide is simply part of
7 their regulatory scheme, but --

8 CHAIRPERSON SCHWARZMAN: Which might be overlap.
9 I'm just mentioning that, because it might be overlap with
10 biomonitoring. Whereas, the cannabis itself isn't.

11 MS. COHN: Yeah, that's very regulated.

12 CHAIRPERSON SCHWARZMAN: I'm interested to hear
13 about -- well, one thing that your comment just said about
14 the youth interns reminded me of conversations we've had
15 with this Panel about the HERMOSA Study that involved --
16 it was a UC run study, and Biomonitoring California
17 contributed lab capacity about -- it was an intervention
18 study looking at changes in -- for three days a change in
19 young Latina's or Latina adolescent women living in the
20 Salinas Valley in their personal care products. And this
21 youth research group chose the products, and did a lot of
22 the information dissemination, and recruited participants.

23 And they were, as I gather, from having heard
24 about the study, really key to the success of the project.
25 And then it has this ancillary benefit of educating them

1 and showing them a career path that they've gotten
2 interested in.

3 MS. COHN: I think I read about that too. That
4 was very -- anyway, that was great.

5 The other one is like to think of your projects
6 as working backwards from known health disparities. So
7 there's -- you know, all of our departments are really
8 good at publishing data on health disparities of health
9 outcomes in ERs, and hospitalizations, and premature
10 mortality and so on, but we're not as good about like --
11 just like working backward from that, and helping
12 communities be engaged in the solution.

13 So I think something like pre-term birth, where
14 there's a huge disparity by race, and there's so many --
15 there's so much attention now to the social determinants
16 of health that go into it, but perhaps not as much to the
17 environmental determinants. And that would be a way to
18 contribute to that. And it's a very well-funded area
19 right now. At least in San Francisco, the UC project is
20 Benioff and Gates funded. And it's in three countries in
21 Africa and three cities in California.

22 So I think they probably -- they also have quite
23 a few research grant opportunities that they put out. I
24 don't know that any of them have been environmentally
25 focused, but it might be a relationship to cultivate.

1 CHAIRPERSON SCHWARZMAN: I don't want to just
2 jump -- I have something else I could say, but I don't
3 want to just dominate the...

4 Go ahead, Tom.

5 PANEL MEMBER MCKONE: How about that. Okay.

6 Now, that I've met that challenge. So one of the
7 questions that sort of is overarching I think in a lot of
8 this and that we often --

9 MS. HOOVER: Get closer.

10 PANEL MEMBER MCKONE: Closer. Okay -- haven't
11 come to terms with is how to -- I've noticed in public
12 meetings that I've been engaged in, which aren't that
13 many, but still ones where we're actually out there,
14 people get very confused about the difference between
15 chemicals and harmful chemicals. And I'm not sure we're
16 still doing a good enough job of making clear that you're
17 probably going to find a lot of chemicals in your blood,
18 but that's not the issue. I mean, I've heard people, you
19 know, make the comment, oh, there's all these chemicals in
20 my blood.

21 Well, of course, there are. I mean even
22 exogenous chemicals, but it's really focusing on what's
23 the difference between finding some chemical and finding a
24 level of concern. And, you know, again, maybe in the
25 medical world, it's pretty easy to do this, because blood

1 pressure -- everybody has got blood pressure, but in some
2 people it's too high, right? We have standards about what
3 there are, so you don't get nervous about something just
4 because you measure it. You get nervous about something
5 because you measure it in some range.

6 But I don't -- I often see that fail to come
7 across in some of the presentations, that there's a big
8 difference between finding a chemical, even a chemical of
9 concern, and finding a chemical of concern at a level of
10 concern. Maybe I'm just missing it, but I think that
11 happens a lot.

12 MS. BUTLER: That does come up a lot at our
13 community meetings. I think you're right that, you know,
14 there's a lot of even essential nutrients that we could
15 find, right, in our hair, or urine, or blood samples. And
16 I think that identifies a real opportunity for workshops
17 with community. There's now a heightened awareness of
18 environmental contaminants amongst any public. I think
19 there's interest there.

20 We see it at all of the community meetings we
21 attend that the general public is now -- because of
22 information that's accessible, you know, they're more --
23 they have good questions and they want to learn more. I
24 think there is a real eagerness to understand some of the
25 science behind it, but we have a lot of -- a lot of work

1 to do in that area of scientific literacy, absolutely.

2 Something that I often struggle with is
3 understanding whether or not, from the scientific
4 perspective, when I'm translating something for the
5 public, is do we have a good understanding scientifically
6 of what levels are considered normal. And that, to me, is
7 a fundamental question that we have to be able to answer
8 before we can explain it to the public. Or if there is
9 uncertainty, maybe that's okay. We need to be able to
10 explain that to the public as well.

11 So that's something I grapple with as a scientist
12 trying to interpret the data for the public is I know that
13 question is going to come up. And I think we had some
14 discussion earlier about NHANES data, and how that is,
15 sure, representative of the United States, but, you know,
16 can -- I can't necessarily point to that data as
17 representative of California, and surely not at Los
18 Angeles County, or the City of Paramount, which is 50,000
19 people.

20 So when we're operating in the field on this very
21 micro level, you know, having to extrapolate nationwide
22 data and pointing to that as background, that now is
23 very -- very imper -- not personable, or not close enough,
24 not relatable enough for the person that I'm talking to
25 who is a mother of three that lives across from a metal

1 processing plant. So there are some challenges there.

2 CHAIRPERSON SCHWARZMAN: Ulrike.

3 PANEL MEMBER LUDERER: Yeah. Now, can you hear
4 me?

5 Yes.

6 I think you bring up a really good point, which
7 is that, I mean, as we've kind of heard in all of these
8 discussions of the Biomonitoring Program as well, that for
9 a lot -- well, for the metals it's -- are actually kind of
10 an exception where there -- for several metals, there are
11 very clear levels of concern. But for even most of the
12 things that the Biomonitoring Program is currently able to
13 biomonitor, we don't know what the level of concern is, if
14 there is a level of concern even, in some cases.

15 So, I mean, that -- I think that is a really
16 big -- that's really important, and it's a difficult thing
17 to communicate. But I think it's really important to
18 communicate. And, you know, you had -- you know, you just
19 mentioned some thoughts on it. And I was wondering if the
20 other -- if you two also had thoughts about that how to --
21 best to do that?

22 DR. CODY: Yeah. I think my role here is to
23 speak as a layperson. Really. I think what the public
24 wants to know is what is the action that we are
25 recommending that they take. So instead of -- they want

1 to know, you know, if -- do I have something that's
2 harmful to my health? What am I supposed to do about it?
3 How do I reduce my exposure, or if I've already been
4 exposed and have a level of concern, now what?

5 Am I -- do I -- who do I need to see? What do I
6 need to do? How do I bring it down? What does it mean?
7 Am I going to die early? Do I need to, you know, plan for
8 my family? It's really basic questions. They want to
9 know the actions that are associated -- what are the
10 recommended actions associated with information they've
11 been given?

12 MS. COHN: I've been involved in the two
13 biomonitoring studies, one as a partner to follow up on
14 lead and/or mercury. And the second when I was in the
15 control group for the Women Firefighters Study.

16 And my experience is that we should be sharing
17 the information at the beginning when you participate.
18 You know, this is what the results page is going to look
19 like. These -- you're going to fall into one of these
20 three categories, and these are the things we're going to
21 recommend. And just really -- I found that there's like a
22 really big time lag, because you only have so many lab
23 resources.

24 By the time I got my flame retardant results, I
25 didn't really remember having been in the study. You

1 know, it was just sort of it didn't -- it was like, oh,
2 yeah -- and it did give the categories of this is what
3 other people have. This is what the control group has.
4 This is what the study group has, and these are the ways
5 you can avoid it. So that was fine, you know. If I had
6 been a very concerned person, that would have been
7 adequate. Only one out of six had a problem.

8 And so I thought it was all well designed, but I
9 think you could just do that education right at the front
10 end, that this affects everybody, and you'll all be
11 somewhere on this spectrum. And, you know, it's very
12 likely that nobody here is going to have something that
13 makes them sick. But we want you to know exactly what
14 we're going to give you at the end, and where you'll be
15 able to put yourself in it, like where you are on that
16 spectrum.

17 I also had the Health Officer, Dr. Aragón, asked
18 me to lead a journal club this past month, that was a
19 recent study about the Flint water crisis and the
20 epidemiology of lead poisoning for kids. And that doctor
21 from Ann Arbor, I think from U. Michigan, said that we've
22 done a disservice to the community by labeling them as
23 poisoned, that we've created a huge stigma based on an
24 epidemiological measurable blip that was equal to the one
25 found in 2010 to 2011, not statistically different.

1 And then it turns out that every county in
2 California has that same blip in 2010 to 2011. I knew my
3 program did, but we called the state, and we found out
4 every county had it. So there was some sort of
5 methodological problem with lead measurements that year.
6 There is such a thing as a false positive. We had it
7 happen another time with the reagents being wrong or
8 something. I don't know what it was.

9 But I'm just saying that -- so they -- so I had
10 to present this journal club about are they poisoned or
11 are they not? And the people in my audience were other
12 colleagues of my department, and they were just outraged,
13 how can we even be asking this question?

14 And so I just think it's important to sort of
15 layout that gradient to people at the beginning, so they
16 understand that it's not like black and white, you know,
17 you're poisoned, you're not poisoned. Clearly, there were
18 kids that had more lead than they should ever have been
19 exposed to. And it's definitely an environmental
20 injustice that all the stress of the community had to go
21 through and is still going through.

22 So there's clearly crimes that happened, but
23 thinking that your child is doomed for the rest of their
24 life is a different outcome. It was not the -- you know,
25 necessarily, the most responsible way to have handled it,

1 so -- and then it turned out, you know, Reuters
2 investigated afterwards and found 400 cities in the United
3 States where lead poisoning rates were higher than Flint,
4 Michigan. There were two or three other cities in
5 Michigan that were higher. None of them had a switch in
6 water and criminal refusal to do corrosion control of
7 their water system.

8 So the -- what actually happened in Flint that
9 didn't get headlines that you only know about like if
10 you're in this field, or you live in Michigan, is that 12
11 people died Legionella from the lack of corrosion control
12 of that water system, because all that extra metal there
13 ate up all the chlorine. And it wasn't -- they weren't --
14 they kept adding chlorine, but they weren't being able to
15 effectively disinfect their water supply.

16 So do you know that? Did you know that 12 people
17 died of Legionella? It's like we're in this field. And
18 so it's just sort of -- it's very overshadowed by the fact
19 it's an environmental justice, very poor community that
20 had a lot of economic justice issues as well. And it's
21 very easy to build the narrative of an additional
22 victimization. And the one doctor who's a wonderful
23 public health champion, she probably had 10 percent of her
24 patient population highly affected. And overall, in the
25 city, it might have been like four percent or two percent.

1 But, you know, so from her perspective it was a
2 epidemic of poisoning. But from a broader epidemiological
3 perspective, it really isn't very different than what was
4 going on anywhere.

5 So the purpose of their epidemiology was to show
6 over 16 years there's actually been quite a reduction of
7 lead poisoning in Flint, Michigan as a public health
8 success story. So they're trying to reframe it to kind of
9 give the community back a sense of health, even though
10 they don't really still have their pipes free of all the
11 corrosion products that happens.

12 I just think that's sort of the field you're in
13 and that's the question you're asking is how do you take
14 this issue that the press just runs away with, and that
15 different people from their health perspective, you know,
16 add to? And I think that that story could have been
17 framed as an environmental justice story without the
18 stigma. Just nobody had the distance and the perspective
19 to do so at the time that it happened.

20 CHAIRPERSON SCHWARZMAN: I'm interested to hear
21 about several of you have mentioned kind of wanting to be
22 able to provide guidance. So what the community wants is
23 guidance about what to do. I mean, also like if you could
24 tell me how bad it is, and what are my risks? That's
25 desired also.

1 And it reminds me of a -- I was once on Michael
2 Krasny talking about, you know, issues of chemicals, and
3 chemical policy, and chemical pollution, and chemicals in
4 people. And, you know, it's a call-in show, which I
5 hate --

6 (Laughter.)

7 CHAIRPERSON SCHWARZMAN: -- being on, because
8 then people call in and ask questions, and you have to try
9 to answer them on the fly. And somebody called in talking
10 about a bunch of chemicals that are in people, and what to
11 do about that. And you walk down the aisle of the
12 hardware store and there's all these products that are
13 chemically intensive, and what you do do?

14 And I started giving some response that I thought
15 was helpful. And he interrupted me to say, I'm talking
16 extraction, like what methods are there to get the
17 chemicals out of my body.

18 And he was a man, so I couldn't recommend he
19 breast feed --

20 (Laughter.)

21 CHAIRPERSON SCHWARZMAN: -- which, you know --
22 anyway. So I think that those -- it was sort of a
23 colorful experience, but it mirrors what a lot of people
24 want, of course. But the -- what the communities are
25 asking for and not getting from us I think tracks very

1 closely to what we don't know. You know, so it's not just
2 like somebody is withholding information, or maybe not
3 even just like that it's a communication problem. But
4 that's -- that's some of the major missing pieces of the
5 puzzle is like you have been exposed to this chemical. We
6 don't actually know how much is hazardous. We don't know
7 all the health effects associated with it.

8 We have some information about like the most
9 serious outcomes from high level acute exposure for some
10 compounds. We have some idea for lower chronic exposures
11 to metals. But for most chemical exposures, and
12 particularly in like the area that you're talking about,
13 Katie, with, you know, kind of gas wells and where we
14 don't know what all is in the extraction fluids, and there
15 isn't disclosure around it, there's so many unknowns. And
16 so it's not -- you know, the questions that you're asking
17 is not just about how to -- how we communicate complex
18 information to communities and individuals, but how do you
19 deal with the fact that we don't know the answer to a lot
20 of those questions. And when somebody says, you know, I'm
21 talking extraction, how do you respond?

22 But I wanted to -- so I just sort of -- it's
23 commiseration, more than anything else, that you are on
24 the front lines trying to answer those questions that I
25 only have to answer the occasional times that I'm on the

1 radio.

2 But that -- that there -- that it's big
3 scientific gaps that are part of the problem about how to
4 answer those questions. But that said, one of the things
5 that I'm hearing is we need to do a lot better job of
6 connecting the dots between the information that is out
7 there and the people who are on the front lines trying to
8 provide it.

9 For example, your question, Karen, about like a
10 community that's concerned about breast cancer and the
11 role of the environment in breast cancer, and how do I
12 tell them what they might ask to be biomonitored for?

13 And I don't know how familiar you are with Silent
14 Spring Institute's work. They're a frequent collaborator
15 of mine on some chemicals in breast cancer issues. And I
16 mention them because they're particularly a public-facing
17 advocacy, education organization in addition to the
18 science that they do. And they -- their website is
19 wonderful and has lists of chemicals that are -- where
20 there's good evidence connecting them to breast cancer
21 risk, and of where there's suggestive evidence, but it's
22 maybe not conclusive.

23 And so there is some information that helps
24 bridge some of those. And you also in San Francisco have
25 SFE, which -- San Francisco Department of the Environment,

1 who I'm sure you're in close contact with, but they're,
2 you know, so uncommonly wonderful resource.

3 MS. COHN: They do a lot of toxic use reduction
4 education.

5 CHAIRPERSON SCHWARZMAN: And just the -- just the
6 internal resources that they have of information or access
7 to information, because they are plugged into the network
8 of scholarship I think more around toxics than is common
9 in most city or county environmental departments or
10 organizations.

11 Yeah, Tom. Or Did you have a response, Sara?

12 DR. CODY: I was just thinking of a question for
13 you all. So with many different types of diseases, we
14 might do surveillance and monitoring to better understand
15 patterns of disease in the population. And then the
16 question -- and it's not so much to -- it's not to direct
17 care for a particular individual that we find. It's to
18 understand what we need to do from a public health
19 perspective, and particularly how it might translate to
20 policy advocacy.

21 And so with the biomonitoring, is there also a
22 infrastructure where you translate the biomonitoring
23 results to policy advocacy, right? So rather than
24 educating the public about all of the actions that they
25 need to take, and all of the products that they need to

1 avoid, and navigate, et cetera, et cetera, is it
2 translating to policy advocacy with, you know, various
3 manufacturers or whatever? I mean, is there a way to sort
4 of, in a systematic way, understand what the policy
5 priorities are as a result of the biomonitoring?

6 CHAIRPERSON SCHWARZMAN: Did you want to response
7 Sara or...

8 PANEL MEMBER MCKONE: Is it on?

9 MS. HOOVER: It's -- you've been circling around
10 something that I had in my mind too, because there's a lot
11 of focus when we engage with individual participants about
12 what can you do. And we try to offer that about possible
13 actions. And we try to make it clear that we're giving
14 you some ideas about possible ways to reduce exposure.
15 But there are cases where we make it clear that it is a
16 larger policy issue that we're taking about, like PBDEs
17 have been spread throughout the environment. There are
18 some things you can do.

19 But it's true that, you know -- and really a
20 fundamental goal of the Program is to support regulatory
21 efforts and public health efforts to reduce chemical
22 exposures. And so that was raised in the morning session.
23 And that's kind of something Lauren and I have talked
24 about having more of a focus on really trying to do that
25 translation about how do our results inform policy

1 priorities.

2 PANEL MEMBER SINGLA: Yeah. I'll echo that, just
3 with the specific example of PBDEs and flame retardants,
4 that there is -- the information and data coming from the
5 Biomonitoring Program having been really important to
6 inform policies, the local policies with San Francisco
7 ordinance and the State level policies on flame
8 retardants.

9 And I think it's a good segue too to a thought
10 that I was having around the desire for, you know, what
11 can be done about this? And I think Katie, in your
12 presentation, you raised the issue of collaborating with
13 enforcement agencies. I think it's a really important
14 point that there's -- there are many factors that are
15 outside of individual level control, and that when there's
16 known sources of exposure that are due to lack of
17 enforcement, that those issues are addressed. I think
18 that's something that communities are really wanting and
19 is very important to them.

20 MS. BUTLER: Yeah. And I think it's unfair to
21 place that burden on the community, right, if there are
22 already enforcement gaps. That is the agency's job. Just
23 to finish that thought too.

24 DR. WU: I just wanted to add something to what
25 Sara had said. And the California Regional Exposure

1 Study, what we call the CARE Study, is something that is
2 surveillance across the state, that we are going to every
3 county across California to try to get this baseline
4 information of how people, how the population, is exposed.

5 And I think one of the findings of that is that
6 everybody is exposed to -- we're all full of chemicals.
7 And, you know, for many of our participants it's the first
8 time they've thought about this, that consumer products,
9 furniture, things that you eat do have chemicals in them.
10 And for many people that can be at least the beginning of
11 a politicizing moment, where they start to have an
12 awareness that you need to look out for yourself. But
13 more than that, you as a community need to think about
14 whether that's a good thing that we trade-off things like
15 convenience or, you know, non-staining things for a bunch
16 of chemicals which may have these harmful side effects.

17 And the more you know about that, the more
18 horrible it is. But everyone is going to take that first
19 step, because otherwise it's very easy to live in a bubble
20 and not think about it at all.

21 So I would say to you, we haven't gotten to your
22 county yet, Sara, but we are working our way up the state.
23 And I would be interested in hearing more about like how
24 do we work with counties, who might not have the
25 resources, to start building that awareness both at the

1 county health department, but in the population about what
2 the CARE Study is doing.

3 DR. CODY: There's sort of two effective routes
4 in. One is with community groups who can -- who can take
5 -- who have an interest in understanding and then
6 advocating. And the other is with the electeds, with the
7 politicians, if -- so I know just the way it works in my
8 county is if one of the board members of the board of
9 supervisors had an issue that is near and dear to their
10 heart, that they really care about, they can effectively
11 advocate and make change and direct resources to an issue.

12 So sometimes it can come from the community up,
13 and sometimes it can come from an elected down. It's
14 harder and slower when it comes within a county look --
15 kind of like a local governmental health department. I
16 think it goes faster when it's one of the other ends.

17 CHAIRPERSON SCHWARZMAN: So, Sara, you're saying
18 we should biomonitor city council members and boards of
19 supervisors?

20 (Laughter.)

21 DR. CODY: Go for it.

22 (Laughter.)

23 CHAIRPERSON SCHWARZMAN: Oliver.

24 PANEL MEMBER FIEHN: I wanted to raise another
25 point that was mentioned before with the word "bubble". I

1 think we should be also careful and not to be too much in
2 our own bubble, but clear that we talk about guidelines
3 and limits of exposure and so on. That these are often
4 meant with quite a bit of safety margins --

5 MS. HOOVER: Closer to the mic.

6 PANEL MEMBER FIEHN: And that these are meant
7 with long-term exposures, not short-term exposures, that
8 these are meant with -- you know, for example, for food or
9 so, with exposures that are very much dependent on that
10 source. And I say that, because I was a little surprised
11 to see -- first of all, I didn't know that 80 percent of
12 San Francisco, you know, had, you know, lead paint. But I
13 was surprised that this was -- would lead to a -- you
14 know, if I understood it correctly to a public comment
15 saying, well, maybe we should hold back on public gardens
16 and community efforts that bring the community together,
17 in the sense of maybe your chickens and your eggs that you
18 would get -- and your salads, would not be so fine.

19 Everybody who lives in the city would know that,
20 and I think it would send the wrong signals to the
21 community to then worry about, you know, the two eggs you
22 would get, or these, you know, couple of salad -- salads
23 you would -- might be possibly eat from the garden in
24 terms of overall exposure.

25 So I think we should rather say, you know, yes,

1 this is an additional exposure to have, you know, food
2 grown in the city, but the benefits in terms of having
3 community around, having peers meeting, doing things
4 together, for psychology, for, you know, antidepression
5 effects to say, these are much more worse. And I would
6 like to say that.

7 MS. COHN: Yes. We came -- we came out that side
8 of the argument also. But we were perceived as police,
9 because we have regulatory authority. So for every garden
10 we decided not to use code enforcement as a tool, only
11 education or free sampling, and always just to recommend
12 raised beds, and imported soil, and to give people the
13 management for doing that.

14 And, you know, most of the gardeners were already
15 well aware of the issue, all the community gardeners.
16 It's just that they all use an ag lab, UMass, and it
17 doesn't really have the same standards as what the rest of
18 us would use in this field. And so they have a false
19 sense of confidence.

20 So it was -- you know, the fact about the one
21 garden I showed is it was on YouTube with all the
22 government officials, you know, doing the ribbon cutting
23 and all that. And there was little kids who lived right
24 next door digging and touching the wall and all that. So
25 it was sort of like thinking about we want you to be

1 successful. We want you to have this sense of community,
2 so let's try to avoid problems that might occur.

3 But it was very hard getting to know the
4 gardening people, and to win them over, and to say we
5 support you. We want you to be successful just for the
6 reasons that you mentioned. And eventually, I think we
7 got there. They link to our guideline now on their
8 website, so...

9 CHAIRPERSON SCHWARZMAN: Did you have a comment,
10 José.

11 PANEL MEMBER SUÁREZ: Yes. I have a question
12 actually. How has -- have you been able to integrate or
13 are you integrating technology into the way that you
14 disseminate findings to your participants or to the
15 community? Something that Meg brought up with the Silent
16 Spring Institute is that they do have a biomonitoring
17 study, which they can invite anybody that is willing to
18 pay \$300 to send their urine. And you send it in there,
19 and of course they measure all sorts of chemicals. And
20 they have an app that you download. Of course, now
21 everything is with aps, particularly with the younger
22 groups, has really good traction.

23 And so then you can see exactly what your levels
24 were compared to the rest of the group that was sampled
25 there. And I think they also do comparisons with where do

1 you stand in relation to the rest of the United States
2 that they have for that particular parameter using NHANES
3 data. So tell me a little bit about that. Do you use any
4 technology?

5 MS. COHN: Well, I don't do biomonitoring. But
6 as far as the lead data, it's all on the State lead
7 programs website. What's interesting is because of --

8 CHAIRPERSON SCHWARZMAN: In PDF form. I might
9 note in PDF form, except for the last year.

10 MS. COHN: It's not great. And believe me every
11 time we want to analyze something, they say, oh, it's
12 right there for you, but actually we can't access it. So
13 it's -- they did -- because of the Reuters article, they,
14 in 2012, looked at all of the cities and counties that had
15 more than 250 children tested in a certain zip code, and
16 they also gave us the rates of case finding. So I have
17 four zip codes that were just as bad as Flint. But I have
18 no way to repeat that data every year to show improvement.
19 It's just like they did that analysis once. So that's
20 what I would want to share.

21 MS. BUTLER: I would say this is an area where we
22 fell short in the response to Aliso Canyon. We were very
23 much emersed in emergency response mode, and we did not
24 get ahead of the health messaging. We could have utilized
25 social media more effectively. The communities around

1 Aliso Canyon are very much engaged in all technology.
2 They're very savvy on their phones.

3 And so we had a real challenge getting our health
4 message out ahead of the gas company's health message, and
5 ahead of any other group's health message. So that's an
6 area that now we're taking a really hard look at to see
7 how we can do better, you know, in the future.

8 CHAIRPERSON SCHWARZMAN: Yeah. Eunha.
9 Eunha, go ahead.

10 PANEL MEMBER HOH: So I'm just switching gear to
11 a different subject that I was interested in Karen's
12 presentation the herbal supplements study that.... I
13 thought it was very interesting. I mean we kind of
14 understand that over general population are exposed to the
15 chemicals, you know, that we probably have to try to
16 lower, try to change the regulation, or policy, or
17 something, you know.

18 But certain population they kind of exposed to
19 take certain products, you know, like this kind of herbal
20 supplement kind of stuff. So I kind of -- I think it's
21 very interesting something in that out of radar, you know,
22 that maybe some minority are more -- could be more exposed
23 to. So I kind of want to hear how that study, that
24 project was initiated?

25 MS. COHN: I think we just had the one case. And

1 that I brought it to the county lead program's meeting for
2 Northern California and they had many cases amongst them.
3 So everybody wanted to use whatever newsletters we
4 published. And, you know, we can give it out to the
5 medical community. And I guess I don't believe that San
6 Francisco has an ethnic press that's related to that
7 population, but maybe in the East Bay there is.

8 I mean, that would be the -- to really like start
9 a community discussion. But the nurses who have been most
10 involved with it are public health nurses in Fremont. And
11 they felt there's a lot of shame to talk about it. Your
12 child's lead poisoned. Somebody is coming to your house.
13 And then it takes a long time for people to acknowledge
14 that they've used this type of imported products. And it
15 could be true for Chinese medicine, ayurvedic medicine,
16 any, it doesn't really matter.

17 So -- and then some of those ones on that slide
18 were just like health food stuff, like, you know, natural
19 food companies that compounded their own things. And
20 we've recently read that Viagra was in some of the pills
21 that people are selling over the counter, right?

22 So it's just that kind of -- it could be
23 anything. So -- but it turns out right now that because
24 we're so proactive to go respond to any lead level, that
25 our high lead levels are almost exclusively direct

1 ingestion of some type of supplement, cosmetic, imported
2 product. And so it's very easy -- I mean, the only
3 exception might be that somebody in the home is a
4 contractor, or a did a do-it-yourself project in the home.

5 So there's a lot of that take-home type of
6 exposure construction dust. But usually, it's some sort
7 of cosmetic that's used traditionally or these medicines.
8 And also, you know, there's a lot of medicines that you
9 take the medicine for the very symptom that you're going
10 to cause. You know, it's like a cyclic thing. And the
11 Mexican home remedies were that way as well.

12 But there's just a lot of stuff that's been
13 adulterated. The lead weighs something, so you can make
14 more money, if you're selling it by the pound in an open
15 market somewhere. It's just a -- that's how it works.

16 DR. WU: Just quickly, we also had some cases
17 coming in to the Environmental Health Investigations
18 Branch, not through Biomonitoring, that are coming from
19 the use of ayurvedic medicine with high mercury. And
20 arsenic drops -- or mineral drops that you add to water to
21 boost the mineral content of your water, which turn out to
22 be very high in arsenic that you can buy at Amazon -- on
23 Amazon.

24 So there is, you know, a plethora of products out
25 there that people are unaware of. They're not labeled or

1 they're certainly not labeled with these particular heavy
2 metal contents that people really unaware of, that
3 they're, first of all, not effective, but also that they
4 can carry these health burdens.

5 On a more population basis, we did ask quite a
6 bit about traditional medicines in our ACE Study. And as
7 Lauren had said, we haven't gotten to that point of the
8 analysis yet, but we will be looking at that.

9 PANEL MEMBER HOH: That will be really
10 interesting.

11 CHAIRPERSON SCHWARZMAN: I wanted to return
12 briefly to this issue that Karen raised about people being
13 motivated through their children's health issues. And
14 it's something that we've seen in working in the
15 occupational health setting too, I think, that there tends
16 to be a mentality of like, well, I'm tough, and I work in
17 this high exposure field. But when you start explaining
18 to people about biomonitoring of kids and what the results
19 are of that, it gets very motivating, because it feels
20 unjust, and people are very protective about their kids.

21 But it's a thorny issue for biomonitoring,
22 because IRB approval is so much more difficult to get for
23 studying kids. And then like NHANES has only gone down to
24 age six. And I think now they're doing urine for down to
25 age three, right? But that's new that they're adding down

1 to age three, but you can't really justify taking blood
2 from little kids.

3 And so it's just a -- I just wanted to return to
4 it, because it's a powerful kind of action angle, but it's
5 also difficult from a biomonitoring perspective. Not
6 technically difficult, but in terms of constructing and
7 conducting studies with consent and IRB approval. So
8 those things are kind of -- it's an inherent contradiction
9 a little bit.

10 MS. COHN: Well, as an interim measure, could you
11 provide the adult with a letter for the primary care
12 physician that the physician could order the tests?

13 Because the lead test is definitely covered by
14 all insurance. But if there's a justification, I imagine
15 a mercury test might be also. And so the primary care
16 could order it for the child.

17 CHAIRPERSON SCHWARZMAN: You mean for sort of
18 targeted metals measuring, that would be tricky.

19 MS. COHN: Because, okay, this family got their
20 exposure through the fish, and we want to find out if the
21 child also got it. So try to make it part of their normal
22 health care to find out, but have it be something --

23 CHAIRPERSON SCHWARZMAN: That's an interesting
24 point for metals. I think it only would work for
25 metals --

1 MS. COHN: Yes.

2 CHAIRPERSON SCHWARZMAN: -- because those are
3 treated clinically and the other exposures we're looking
4 at are not.

5 MS. COHN: Yeah. But it seems like it's almost
6 like an ethical obligation to give the family a way to
7 follow through with it for their child's health.

8 MS. BUTLER: Yeah. I was thinking along those
9 same lines of public health intervention possibly. After
10 you get an adult's results, if they exceed a guideline,
11 then now there is a public health obligation maybe to
12 partner with that local agency to, you know, talk to the
13 family about having their children tested.

14 MS. HOOVER: I just wanted to note the time and
15 that we should call for public comment. And I can tell
16 you there's no public comment from the web.

17 So any public comment from the room?

18 No. Back to you.

19 CHAIRPERSON SCHWARZMAN: Thank you for that.

20 So Tom has one last thing. So I think we
21 actually have a tiny bit of wiggle room, and we'll -- Tom,
22 and then we'll move on to Lauren's closing remarks.

23 PANEL MEMBER MCKONE: One thing that came up in
24 the presentation that I don't think we followed up on is
25 pathways. And in particular, the -- you know, when people

1 are worried about something, you know, there's first a
2 question of, well, how bad off am I? But the other end is
3 how do I limit my exposure? And you can't do that if you
4 don't understand the pathway.

5 There's been a lot of mistakes made. I mean,
6 going back to early on we were looking at in California
7 drinking water standards. And the assumption was you're
8 not exposed, if you don't drink the water. And so people
9 got bottled water, and then we did these experiments that
10 showed volatile chemicals. There were getting six liter
11 equivalent ingestion from a shower, just by inhaling the
12 fumes coming off the water unrelated to temperature.
13 People thought, oh, I'll take a cold shower. Not true.

14 And then, you know, there's a lot of danger about
15 misinterpreting pathways both ways. I mean, people
16 assume like that if they live near a field where there's
17 pesticides use, that that's going to dominate their
18 pesticide exposure. We have data that shows unless you're
19 really close, you're probably still getting most of your
20 pesticide from food residues that are in the marketplace.
21 It's not coming from -- which was really surprising.

22 So we have to understand this, because -- I mean,
23 this is a big challenge for us, and I think for you too,
24 is that it's very easy to misinterpret pathways and to
25 assume pathways are not there that actually are there, or

1 to actually have people say this is a pathway. I'm
2 worried about that it's not the right one. It's like what
3 they're putting on their faces.

4 So I don't know if there's thoughts about how to
5 move forward. But I just think we should put it on our
6 agenda as something that's going to be very important to
7 communicate to people, because that's how they protect
8 themselves or would want to know how to protect
9 themselves.

10 CHAIRPERSON SCHWARZMAN: Thank you.

11 We do have one public comment. All right. You
12 can come to the podium.

13 MS. BADE: So, hi, My name is Ludmilla Bade.
14 And I am actually a member of the public.

15 MS. HOOVER: Speak into the mic

16 MS. BADE: Like this one? I'm confused.

17 MS. HOOVER: I thought you were going to -- here
18 you go.

19 MS. BADE: Okay. Scary.

20 (Laughter.)

21 MS. BADE: I'm Ludmilla Bade, okay, and I'm a
22 member of the public. I currently live in Oakland.

23 And thank you, thank you for all the work that
24 each of you do, and your departments do, and everybody
25 does.

1 I do want to confirm that, yes, my concern is
2 what do I do about it? I'm extremely -- I'd be extremely
3 interested in knowing more about what plants could help
4 purify my air, and help mitigate the effects of air
5 pollutants, industrial auto, building -- you know,
6 building materials, everything.

7 I'm interested in, of course, the NASA study that
8 was done on indoor plants. It was done in '89. There's
9 some very good information there on some easy-to-grow
10 house plants that are good on an indoor environment. I
11 would love, love, love to see more information on outdoor
12 plants that could be planted in the small garden areas
13 that we have in Oakland that people could put on rooftops,
14 balconies, you know, different garden areas. What type of
15 plants, trees, groundcover is helpful in mitigating just
16 the whole pollutants that we have. That's something that
17 people could do with, you know, \$25 and, you know -- you
18 know, just, you know, to grow a plant.

19 I'd -- I'm also interested in filtration systems.
20 What kind of filtering works well to reduce the amount of
21 pollutants coming in. I'm particularly interested in ones
22 that don't require power. I'm actually one of the -- I've
23 moved -- I had to move out of my house about six months
24 ago, so I'm actually in a small trailer on the streets in
25 Oakland. So I'm actually getting -- I'm getting to be a

1 tourist in Oakland, and kind of see different
2 environments.

3 But I'm actually on the street and I don't have
4 electricity. So it's -- it would be -- you know, is there
5 some kind of filtration thing that I could use to keep so
6 much of the grit and air pollution from coming into the
7 trailer just so I sleep better?

8 And just anecdotally, I have -- I've put like a
9 small vertical garden at the front of my trailer, which,
10 you know, is on a pallet, and I've got plants hung in
11 there, and I'm, you know, putting some of the plants in
12 there. So I'm experimenting with this on my own. But
13 I -- but I think that's kind of a situation not everybody
14 would be in, you know, as far as not being in it -- in a
15 fixed home.

16 On the other end of it what you said about not
17 having a baseline data, you know. I agree. You know, if
18 I'm going to my employer, and I'm saying, look, I'm
19 getting a toxic effect from the amount of air fresheners
20 that you all are putting in the restrooms here, there's no
21 baseline data that that could refer to. I can't take -- I
22 can't take it and -- you know, and do it as a work injury,
23 and go to their doctor, and get a definitive thing of
24 like, no, I can't be around this.

25 You see what I mean? It all becomes all kind of

1 fuzzy, and I'm a problem child, or something. So anyways.
2 But as far as all kinds of -- if we knew what was in the
3 population more, that would be very, very helpful.

4 Is there anyway to get like a broader sampling of
5 people? Could I -- if I were giving blood, could I -- if
6 I were part of a study, can I just say, yes, any -- you
7 can use this for any study that you want and share the
8 data, if I'm part of a study, or can you take sample --
9 could people volunteer to give samples just so you have
10 that.

11 Because in order to implement solutions, you kind
12 -- it would -- it seems it would help a lot to have that
13 comparison.

14 Does that help? Any questions for me? Any of
15 you all want to know what's happening on the streets of
16 Oakland?

17 (Laughter.)

18 MS. BADE: All right.

19 CHAIRPERSON SCHWARZMAN: Thank you for that. I
20 think we --

21 MS. COHN: Grateful you made it to this meeting.

22 MS. HOOVER: Thank you so much. I'll say one --
23 I'm just going to respond to yes. So in terms of donating
24 a sample, definitely. We save samples, and we can test,
25 and we actually ask people can you donate your sample, and

1 -- if we want to use it in the future? And the vast
2 majority of people do opt into that.

3 MS. BADE: Great. Thank you.

4 CHAIRPERSON SCHWARZMAN: I'm going to turn over
5 to the next part of the meeting, which is for Lauren to
6 give some wrap-up, and particularly about sort of action
7 items. And then we'll move on to topics for 2019.

8 DIRECTOR ZEISE: Okay. So I'm going to make it
9 pretty quick. We had a really rich and wonderful
10 discussion today, in the morning and in the afternoon
11 both.

12 And so in the morning, I'm just going to say a
13 few highlights of the discussion. One of the issues
14 around priorities for funding that came up in different
15 ways was, you know, how do we -- how do we leverage with
16 academia and other funding sources? And I think as an
17 action item, we heard this actually at a previous meeting
18 as well. And so certainly something for the Program to --
19 to explore further than we -- than we already are.

20 Another was just thinking in terms of priorities,
21 in terms of regulatory effectiveness and directing
22 resources to answer real regulatory questions, and that
23 that -- in terms of getting support for the Program, we
24 can see how we might better go about doing that.

25 And as part of that, there was a -- the point

1 made that we really need to maintain some of the older
2 analytic panels, so as we look at swapping in different
3 kinds of panels that we also need to think about
4 historical data, because that gives us information on
5 regulatory effectiveness.

6 There was real encouragement for engagement with
7 academia, in terms of the non-targeted analysis. And a
8 good deal of discussion around the challenge of
9 maintaining complex equipment. And that efficiencies are
10 to be gained even with using some of the older equipment.
11 But the whole idea of how best to juggle our limited
12 resources is something that came up in a few different
13 cases.

14 So let me just move to -- I think we just heard a
15 very rich discussion with the counties. And one of the
16 key issues that we heard was around youth. Youth as both
17 interns -- youth interns to help disseminate information,
18 can be particularly effective, but also in performing the
19 biomonitoring and testing of children, that can be
20 effective too. But, of course, we are limited in our
21 ability to do that.

22 Tom brought up the issue of chemicals that are
23 harmful versus un harm -- harmful chemicals versus just
24 exposure to chemicals that aren't at harmful levels. And
25 that levels of concern are something that -- you know,

1 when we look at what we've done with the metals, in terms
2 of report back, most of the metals do have levels of
3 concern. So we actually know, as we return results to the
4 community, we can point out those levels that are harmful.
5 But for the most part we can't do that, and we had a
6 number of comments around how we go about framing the
7 results as we do report back to the community.

8 And let's see. So the issue of what is normal,
9 and how to discuss it. And in many of our reporting back
10 we frame the results in terms of levels that we see at the
11 national levels, and levels we see in the particular
12 study. But, of course the -- that, in many cases, we are
13 uncertain about what is harmful. So I think Meg made the
14 very nice point about how we can do a better job of
15 potentially framing the report back, so that in a way that
16 we begin to talk about the uncertainties and their
17 response, and help use existing information to bridge the
18 discussion of uncertainties.

19 And I guess I'll stop there. Thank you.

20 CHAIRPERSON SCHWARZMAN: Thank you, Lauren.

21 For the remainder of the time that we have, we're
22 going to do two things. One is that Sara Hoover will
23 discuss possible topics for 2019. And I just want to
24 mention now that after that there is a time for final
25 public comment.

1 And so the opportunity is not gone yet. And if
2 you're listening on the webinar you can send it in, and
3 we'll revisit that after Sara presents.

4 So Sara Hoover, is Chief of the Safer
5 Alternatives Assessment and Biomonitoring Section at
6 OEHHA. And she will give a brief presentation on the
7 topics for 2019 SGP meetings.

8 MS. HOOVER: And instead of blinding you with the
9 projector, if you can just pull out your sheet, if you
10 have it in front of you, but it's a very brief
11 presentation. So we always do this every November. We
12 kind of foreshadow the next year and start thinking about
13 planning the agendas for the three meetings. And I'm
14 pleased to announce that we've already set the meeting
15 dates. So the next meeting is March 6th in Sacramento.
16 Then we have a summer meeting on July 25th hopefully in
17 Oakland, and then November 6th also in the Bay Area with
18 the specific location to be determined.

19 And I'm very excited that we actually have a plan
20 for the March meeting already. And that will include our
21 usual program update. And then we're going to have a
22 special session with our special guest speakers, i.e. our
23 newest SGP members who have all agreed to present on their
24 results in their particular research that they think will
25 help inform the Program.

1 So we're going to hear from José Suárez, Veena
2 Singla, and our newest member Eunha Hoh. So thank you all
3 for agreeing to that. That's going to be a really
4 interesting and different kind of session.

5 In terms of the remaining two meetings of the
6 year, you've seen the approach we took this year, we had a
7 big focus on reporting back on study progress and study
8 findings. So it's really exciting that we have such a
9 great group of analysts in Ehib and Nerissa's group now,
10 so they can really dive into the findings and start to
11 analyze this rich data set we've collected.

12 So we're going to hear more about the Foam
13 Replacement Environmental Exposure Study, or FREES.
14 Kathleen Attfield in Nerissa's group has been delving into
15 that data. And we're hoping to hear a presentation from
16 her in the summer. We're also going to continue to hear
17 updates and initial findings from the CARE Study. And
18 later in the year, we hope to present some information
19 from our East Bay Diesel Exposure Project, which did
20 include biomonitoring of children. So that should be
21 really interesting.

22 As I mentioned this morning, we are open to
23 considering some chemical selection items again. As you
24 know, the -- we've been very resource restricted in terms
25 of what the labs can take on. So we put chemical

1 selection on hold. We also have a very complete list of
2 designated chemicals, in part because we take this
3 approach of listing by chemical classes.

4 But one idea that actually Lauren brought up is
5 to take a look at fluorinated compounds, other than PFASs,
6 because some of those have been coming to our attention.
7 And we would propose doing a preliminary screen. So
8 that's where we bring some initial data to the Panel and
9 you decide if it's something we should pursue more
10 formally.

11 And then we'll continue to track possible
12 candidates to look at for biomonitoring, including, for
13 example, if you remember our March meeting we engaged with
14 the California Air Resources Board about work they're
15 doing. So we want to track potential air pollutants of
16 concern in impacted communities across the state. We also
17 had a great engagement with the Water Board at the last
18 meeting, so we want to continue to keep track of any
19 emerging water pollutants that might come up. And we do
20 maintain a close relationship with the Safer Consumer
21 Products program. So we'll keep looking at any emerging
22 consumer product chemicals, new substitutes, things that
23 are cropping up.

24 So again, if anybody listening, or anybody on the
25 Panel, or our guest discussants if there are any chemicals

1 of interest that you can think of, please feel free to
2 email those to us.

3 In terms of other topics, the two things I
4 flagged is to just -- we need to continue to have a
5 conversation about program priorities, because we're going
6 to continue to face restricted resources, as far as we
7 know, in the near future.

8 And then usually we have -- once a year we have
9 visitors from CDC. So we can think about topics we might
10 want CDC to address.

11 So that's what I pulled together. Panel members
12 and the public are welcome to propose, to comment on
13 these, propose additional 2019 SGP topics. I think we
14 actually have a few minutes, if anybody wants to make
15 comments or if there's any public comment.

16 CHAIRPERSON SCHWARZMAN: Can I ask you a
17 question, Sara?

18 MS. HOOVER: Sure.

19 CHAIRPERSON SCHWARZMAN: What comes to mind from
20 recent meetings with the CDC visitors is VOCs and
21 non-targeted screening have been two recent presentations
22 from CDC. What am I missing. So we're not asking for --

23 MS. HOOVER: No, CDC has not presented on
24 non-targeted screening.

25 CHAIRPERSON SCHWARZMAN: Okay.

1 MS. HOOVER: That's not their focus, but VOCs.

2 CHAIRPERSON SCHWARZMAN: VOCs. And was there --
3 what was the last CDC visit before VOCs were the topic?

4 MS. HOOVER: Well, actually the last topic was
5 Antonia, PFASs. And then Victor De Jesus presented on
6 VOCs. So those are the two.

7 CHAIRPERSON SCHWARZMAN: So PFASs and VOCs.

8 MS. HOOVER: But what we -- what we typically do,
9 Meg, is we think about, you know, a topic of particular
10 interest and who at CDC might address it, and then we
11 target a person to invite out.

12 CHAIRPERSON SCHWARZMAN: I just wanted to put in
13 our consciousness as we consider this what our recent
14 topics have already been.

15 MS. HOOVER: Okay. Well, and I can come up with
16 a more complete list of what we've heard from and what we
17 might want to touch back in on. And a lot of it is driven
18 by which CDC scientist can come, and what their particular
19 focus is right now.

20 CHAIRPERSON SCHWARZMAN: It's the end of the
21 afternoon, but any questions for Sara, or the Program, or
22 ideas about possible priorities or things you'd like to
23 hear about before making -- having ideas for possible
24 priorities.

25 Yeah, Karen.

1 MS. COHN: Are you able to do bacteriological
2 biomonitoring?

3 CHAIRPERSON SCHWARZMAN: You said
4 bacteriological?

5 MS. COHN: (Nods head.)

6 MS. HOOVER: No.

7 CHAIRPERSON SCHWARZMAN: I think it's --

8 MS. COHN: A lot of research going on, about
9 asthma prevention.

10 MS. HOOVER: I mean, we have looked at
11 antimicrobials, you know, as a class, but it's really, you
12 know, the environmental contaminant. Our list is
13 designated chemicals. Yeah.

14 MS. COHN: It's about the microbiome, and --

15 MS. HOOVER: I mean, I said no really -- I said
16 no really flippantly, but, you know, if there's a -- if
17 there is a link, you know, a particular chemical link, we
18 could look at something like that.

19 MS. COHN: I have to have a chemical attached to
20 it.

21 MS. HOOVER: Yeah. But that's not unheard of.
22 You know, that could be an interesting thing to delve
23 into.

24 Lauren, did you --

25 DIRECTOR ZEISE: Oh, no. I just had an idea that

1 I think this morning we heard about health tracking and
2 leveraging with studies that are also looking from an
3 epidemiological point of view. And I just wonder if there
4 might be some opportunities for, you know, tracking
5 certain, maybe the PFAS or something and marking it with
6 sort of upstream biomarkers of lipid metabolism or
7 something such as that.

8 MS. HOOVER: Yeah, like the comment that Meg
9 made. So, yeah, we could consider, you know, maybe a
10 theme of fluorinated compounds, but also looking at some
11 of these interesting -- a guest speaker on something like
12 that, yeah.

13 CHAIRPERSON SCHWARZMAN: Taking off on Lauren's
14 idea. You know, the weakness of epi studies is usually
15 exposure assessment. And that's the strength of
16 biomonitoring. So I think that's an interesting link to
17 pursue just because it's so fruitful in terms of the
18 evidence that it potentially generates.

19 And the question is like finding an epi
20 researcher who has funding who wants to improve their
21 exposure assessment through biomonitoring and can support
22 biomonitoring. But I'd be interested in thinking along
23 those lines a little bit.

24 MS. HOOVER: Yeah, good idea. And any comments
25 or particular reactions to the list I did put out? Do

1 those sound interesting and useful?

2 Yeah, nodding is fine.

3 CHAIRPERSON SCHWARZMAN: I have one other thought
4 about your mentioning air pollutants. And it's not
5 necessarily my particular area of expertise, but I've seen
6 a couple papers recently just connecting to Karen's idea
7 about current interest and funding for pre-term birth
8 studies. And there's recently been a little flurry of
9 literature around toxic air contaminants, and PM, and
10 preterm birth. And that's where my expertise ends, but
11 it might be worth thinking in that direction.

12 MS. HOOVER: Yeah. Great.

13 CHAIRPERSON SCHWARZMAN: Okay. Any -- no public
14 comment from the web.

15 Any comments from the room before we close just a
16 couple minutes early?

17 Okay. So thank you all for the really rich
18 conversations today. It was particularly interesting. I
19 love getting to hear results, and results analyses.
20 That's always like -- it's like the candy, right? We
21 spend all this time talking about conducting studies, and
22 how it's going. And hearing about the results and the
23 analyses is really fun.

24 And then to connect with colleagues in a
25 different scale -- not scale, but like locus, not State

1 level, but county level and city level coming with a
2 different charge, but overlapping, and the concerns that
3 you're addressing, I think, really enriches the
4 conversation. So thank you to everyone.

5 And to the staff for putting together this
6 meeting and preparing us as a Panel so thoroughly, and
7 making our job really easy.

8 So with that, I will wrap-up and adjourn the
9 meeting. I'm supposed to announce that a transcript of
10 the meeting will be posted on the Biomonitoring California
11 website when it's available. It's usually not long before
12 the next meeting, right, is often the timing of it.

13 And the next SGP meeting, as Sara mentioned, will
14 be in Sacramento on March 6th, 2019. And with that, I'll
15 just thank everybody, the Panel, our visitors, and the
16 staff and adjourn the meeting.

17 (Applause.)

18 (Thereupon the California Environmental
19 Contaminant Biomonitoring Program, Scientific
20 Guidance Panel meeting adjourned at 4:42 p.m.)

1 C E R T I F I C A T E O F R E P O R T E R

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

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

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

14 IN WITNESS WHEREOF, I have hereunto set my hand
15 this 25th day of November, 2018.

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