VIDEOCONFERENCE MEETING

STATE OF CALIFORNIA

ENVIRONMENTAL PROTECTION AGENCY

AIR RESOURCES BOARD

SCIENTIFIC REVIEW PANEL

ON TOXIC AIR CONTAMINANTS

ZOOM WEBINAR

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9:31 A.M.

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

A P P E A R A N C E S

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Ahmad Besaratinia, PhD

Paul D. Blanc, MD

Stanton Glantz, PhD

S. Katharine Hammond, PhD

Michael T. Kleinman, PhD

Joseph R. Landolph, Jr., PhD

Lisa A. Miller, PhD

Beate R. Ritz, MD, PhD, MPH

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REPRESENTING THE DEPARTMENT OF PESTICIDE REGULATION:

Nan Singhasemanon, PhD, Assistant Director, Pesticide Programs Division

ALSO PRESENT:

Gustavo Aguirre, Jr., Central California Environmental Justice Network

Amy Kyle, PhD

David Viveros

Mark Weller

I N D E X

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

P R O C E E D I N G S

CHAIRPERSON ANASTASIO: All right. Good morning, everybody. Welcome to this meeting of the Scientific Review Panel. First, a bunch of notes after calling this meeting to order.

First, I'd like to welcome everybody. This meeting is being recorded and it will be transcribed. Also, for Panel members and everyone else, the chat function in Zoom, there will be a transcription of that as part of the public record, so please keep that in mind when you're making comments.

I'd like to next introduce our two Spanish interpreters, Ms. Marci Valdivieso and Ms. Claudia Lindgren. And they're going to now give instructions in Spanish for joining the Spanish-translated channel of the meeting.

So Marci or Claudia.

MS. LINDGREN: Claudia. Good morning. Thank you.

(Interpreter translated in Spanish.)

MS. LINDGREN: Thank you, Cort.

CHAIRPERSON ANASTASIO: Gracias, Claudia.

Okay. Next, we're going to introduce the Panel.

MS. LOVE-LAZARD: Cort, can I interrupt you real quick and just --

CHAIRPERSON ANASTASIO: Yes.

MS. LOVE-LAZARD: -- make sure that everybody selects either English or Spanish by choosing the interpretation globe at the bottom. If you could just pause a sec. I know this is a new feature for many of us. Just make sure that everyone gets that. So at the bottom of your screen, there should be a globe that says interpretation and feel free to chat with me, Christal, in the chat box privately if you're having issues. But there should be an interpretation button at the bottom. And we are asking that everybody selects either English or Spanish.

Do you see that the bottom of your screen?

CHAIRPERSON ANASTASIO: Christal -- oh, I see it now, yes.

MS. LOVE-LAZARD: Okay. Good.

CHAIRPERSON ANASTASIO: It just appeared.

MS. LOVE-LAZARD: It just appeared. Good.

Let's just give folks a sec. I know this is a -- is a different meeting format than many of us are used to. So we are asking for everyone to select either English or Spanish. And that will allow for the simultaneous interpretation to occur.

CHAIRPERSON ANASTASIO: Fantastic. Sorry. I'm responding to a request by the interpreter in the chat.

I'll be right with you.

MS. LOVE-LAZARD: Yeah. And it goes without saying, everyone, that we just appreciate your patience. This is a new platform and we're trying to do it in both languages. So we appreciate in advance your patience with whatever technological glitches we experience along the way.

CHAIRPERSON ANASTASIO: There will be no glitches.

(Laughter.)

CHAIRPERSON ANASTASIO: This is a glitch-free meeting. We're not allowing any glitches.

(Laughter.)

CHAIRPERSON ANASTASIO: All right. So next I'd like to introduce the Panel. So I'm Cort Anastasio. I'm Chair of the SRP and I'm a Professor at UC Davis.

Joe, you want to go next.

Sorry, Joe, you're muted.

PANEL MEMBER LANDOLPH: Hi. I'm Joe Landolph, University of Southern California, Keck School of Medicine. And I'm Associate Professor of molecular microbiology and immunology, pathology, and molecular pharmacology and toxicology and I do cancer research.

CHAIRPERSON ANASTASIO: Great. Thank you, Joe.

Mike.

PANEL MEMBER KLEINMAN: Good morning. I'm Mike Kleinman. I'm an inhalation toxicologist from the University of California, Irvine, in the Department of Environmental and Occupational Health.

CHAIRPERSON ANASTASIO: Thank you, Mike.

Kathie.

PANEL MEMBER HAMMOND: Good morning. This is Kathie Hammond. I'm a Professor of environmental health sciences at the School of Public Health, University of California, Berkeley. And my area of expertise is exposure assessment.

CHAIRPERSON ANASTASIO: Thank you, Kathie.

Paul.

Sorry, Paul, you're muted.

PANEL MEMBER BLANC: I'm Paul Blanc. I'm a Professor of medicine at the University of California, San Francisco. My area of expertise is occupational and environmental medicine and medical toxicology.

CHAIRPERSON ANASTASIO: Great. Thank you, Paul.

Lisa.

PANEL MEMBER MILLER: Good morning, everybody. My name is Lisa Miller. I'm a Professor in the Department of Anatomy, Physiology, and Cell Biology at the UC Davis School of Veterinary Medicine. And my area of research is in air pollution and respiratory immunology.

CHAIRPERSON ANASTASIO: Great. Thank you, Lisa.

Stan.

PANEL MEMBER GLANTZ: I'm Stan Glantz. I am now a retired Professor of medicine from UCSF. And I'm on the Panel in the biostatistics seat.

CHAIRPERSON ANASTASIO: Thank you, Stan. And congratulations on your retirement.

PANEL MEMBER GLANTZ: Yep. Well, I'm still -- I'm still doing my best to cause --

CHAIRPERSON ANASTASIO: I'm sure you're not slowing down at all.

PANEL MEMBER GLANTZ: Not too much.

CHAIRPERSON ANASTASIO: Beate.

PANEL MEMBER RITZ: I'm Beate Ritz, Professor of Epidemiology in the Department of Epidemiology, Environmental Health and Neurology at UCLA, the Fielding School of Public Health. My specialties are in human observational research, mostly focused on pesticides and air pollution.

CHAIRPERSON ANASTASIO: Thank you, Beate.

And Ahmad.

PANEL MEMBER BESARATINIA: Good morning. I'm Ahmad Besaratinia. I'm Associate Professor of preventive medicine at University of Southern California, Keck School of Medicine.

CHAIRPERSON ANASTASIO: Great. Thank you, Ahmad.

All right. So it's wonderful to have the entire Panel here. As Christal mentioned, this is the first time we've been using Zoom for an SRP meeting. But as I mentioned, there will be no technical difficulties, so don't worry about that.

We will be inviting public comments on every agenda item. Everything we're going to talk about today is related to AB 617. So what we'll be doing is having a presentation, then the SRP will have a chance to comment, and then we'll give the public a chance to comment.

All right. So today's agenda is shown on the introductory slides. Christal is going to pop that up through the magic of technology.

Wonderful. Thank you, Christal.

So one note, after the Panel discussion and then the public providing comments, members of the public, you can either type your question into the chat box of Zoom or you can raise your hand and then I can call on you through the participant's box. So either way should work. And in interpretation will be available for those who wish to provide comments in Spanish.

Okay. So I'm going to pause now and let our Spanish interpreters do their best to interpret what I've just said.

MS. LOVE-LAZARD: I think we're good.

CHAIRPERSON ANASTASIO: Our interpreters are so good that they're already done. Fantastic.

Okay. So since this Zoom format is different from what we've done in the past, we're going to go over some ground rules before we proceed. And so I'm going to introduce Christal Love-Lazard from California Air Resources Board's Environmental Justice Office. She's our technical wizard and she's going to go over our community expectations for this meeting.

Christal

MS. LOVE-LAZARD: Thanks, Cort. Technical wizard is definitely overselling it, but I'm happy to support you guys in this meeting today. Thank you so much for having us.

So just a few reminders. I know many of us are on Zoom, but it bears repeating to please mute yourself at all times, unless you are planning to speak or are speaking, just so there isn't a lot of background noise. There's a lot of folks on this call.

And if you haven't already done so, please make sure to use -- to rename yourself with your full name, your first and last name. You can do it by clicking into your picture on the top right hand corner. There's three dots and you can rename yourself. And so we will --

because we're not going to do self-introductions for everybody at this point, but we do want everyone to see who all is here. And this is a Zoom meeting, so it's fully open, so everyone can click into the participants link and see who all is participating today.

So if you need any help at any point, feel free to chat with me directly in the chat box and I can -- I can give you a little assistance.

So if you can't find your mute/unmute is on the bottom of your screen on the left. It's a little microphone button. Because this is a Zoom meeting and it's open, everyone has the ability to mute and unmute your -- themselves. If you forget, and something is going on in the background, one of our core team running the meeting will probably mute you just to remove the background noise.

If you are on the phone only and not participating in the Zoom -- the full Zoom, please dial star 6 to mute and unmute yourself.

Your video is a wonderful way to sort of virtually recreate this in-person experience, but it does cause a lot of bandwidth. So if, at any point, you need to turn off your video, you can do it just by clicking your video camera at the bottom here and it will alleviate some of the bandwidth issues or just give you the

opportunity to step away and still listen.

Like Cort mention we are going to use the raise-hand feature today to indicate that you want to participate in the discussion or you have a comment or a question. So you can find your raise-hand button first by clicking participants and then the little blue hand.

And again, Cort, we already went over this, but it bears repeating, if anyone has just joined us, that we are using language interpretation in this meeting. And we ask that everybody in the meeting select their preferred language, be it English or Spanish, to participate. And chat box is also at the bottom. It says little chat box with the little dialogue doohickey coming down.

Please use the chat icon. If, at any point in the meeting, you want to chat one-on-one with me or anyone else in the meeting, you're welcome to do so. You can also put in comments, if you would like them to be captured in the chat function, but be aware that the chat is recorded. And so be civil and respectful at all times, please.

Okay. Last, but not least, you can use -- we are doing public comment. Like Cort mentioned, we're going to have public comment opportunities after the Panel discusses each agenda item tonight -- today. And you can use your chat comment -- the chat function to provide your

comments, if you don't want to raise your hand verbally and we'll record all of those.

The Panel may or may not have time to review all of those comments in the meeting itself, depending on how much we -- you know, how much dialogue there is and how many comments are given, but we will -- staff will commit to carefully review them and follow up as necessary.

If you have any priority items that you don't feel were discussed today, but you would like a response, I am definitely not in charge. I am just here helping. So it's still Lori here at CARB who is your point of contact and you can see her email here displayed. So please follow up with Laurie.

Okay. So again, if you have any tech support issues feel free to reach out, but I think I'm going to turn it back to you, Cort, to get the meeting really going.

CHAIRPERSON ANASTASIO: Great. Thank you very much, Christal.

So three major items at our meeting today. The first one is a continuation of the discussion we had with DPR on July 9th, but they're update on the proposed mitigation pilot studies for the pesticide 1,3-dichloropropene in the AB 617 community of Shafter. So we'll start with that.

And then we'll move on to Mike Kleinman will give us an informational update on the AB 617 Consultation Group meetings he's been attending.

We'll then segue into an informational update on CARB's Study of Neighborhood Air near Petroleum Sources, also called SNAPS. And that's going to be two pieces. First, we'll get an update from the SNAPS staff, and then John Faust from OEHHA, the Office of Environmental Health Hazard Assessment will talk to us about provisional health guidance values.

As I mentioned earlier, each of these items we will first go to comments and discussion for the SRP, and then once that's concluded, we'll go to public comment.

All right. So without any further delay, let's move right into our first agenda item. And to remind you again, right, we heard from Edgar Vidrio of DPR on July 9th about the beginning of the Shafter study. And today, Dr. Nan Singhasemanon of DPR is going to give us a synopsis of the July presentation, but then also an update on the current status of the mitigation pilot studies that they're planning for Shafter.

All right. Thank you very much. And, Nan, the floor is yours.

(Thereupon an overhead presentation was Presented as follows.)

DPR ASSISTANT DIRECTOR SINGHASEMANON: Great. Thank you, Cort.

Good morning. So let me go ahead and I'll begin sharing my screen.

Is that showing?

CHAIRPERSON ANASTASIO: Yes.

DPR ASSISTANT DIRECTOR SINGHASEMANON: And, okay, then I will be switching over to slide show mode. Then I'm going to switch. Good thing I practiced at this.

Swap. There you go. Is that good?

CHAIRPERSON ANASTASIO: (Nods head.)

DPR ASSISTANT DIRECTOR SINGHASEMANON: Okay. Hold on a second here. Let me -- I've still got something else over here. Okay.

So good morning, everybody. As Cort said my name is Nan Singhasemanon. I am one of the Assistant Directors over here at the Department of Pesticide Regulation in Sacramento. And today's presentation is really going to be kind of a bit of an update on what Edgar Vidrio the Branch Chief of our Environmental Monitoring Branch presented in July. But, of course, there's been quite a bit of development since then and I'm here to share that with you.

Now, I'm going to be referring a lot to the 1,3-dichloropropene. It's 1,3-D for short. And sometimes

I'll refer to the mitigation pilot simply as the pilot, the pilots, you know, mitigation pilot program. So just be aware of some variation of where I might go with that.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: Well, first, I'd like to thank the SRP for having DPR here to present our mitigation pilot program as it performs its function in an advisory role to support AB 617. I believe DPR is one of the first agencies to -- to engage the SRP in those role on our AB 617-related work.

To start, I'd like to point out that, you know, there are some overlaps and intersects between AB 617 and our mitigation pilot program. And specifically, you know, the Shafter Community Emission Reduction Plan, or the CERP as some folks call it, includes 1,3-D explicitly. Also, the Shafter community steering committee is an -- you know, we have been engaged with -- with that -- that group for sometime now. In fact, I believe starting -- started in 2019 as the CERP is being developed. So there's already ongoing interactions there.

Thirdly, there is certainly a geographical overlap in that Shafter is just one of the three pilot study areas that DPR is looking to conduct the study. And, in fact, DPR has a -- an ambient monitoring network -- monitoring site there at the Sequoia Elementary

School over the last couple of years. But before that, we've been -- I think we've been in Shafter for -- since 2011. So before that, there are air monitoring stations located at the local high school and the Shafter High School.

And to remind -- excuse me, I'm moving the camera a little bit to adjust here.

Just to remind folks again that, you know, the goal of our pilot program, and this was touched on last time, is to -- is to explore alternative 1,3-D applications, methods that we want to evaluate and see if they're feasible for growers and applicators to use and implement and see how effective they are at reducing the emissions and also the acute exposure, you know, at the -- at the site of application.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: To show why there's a great interest in 1,3-D use and emissions in the area, here's the 1,3-D use map showing relative use of the fumigant in townships. And the township here I refer -- I'm referring to are the squares -- the colored squares. They're 6 by 6 mile -- square miles, or 36 square miles per town -- square -- per township, excuse me. So they're pretty good sized.

The darker squares represent higher average

annual use over this selected period here. I think in this case it's 2014-2018. So that gives you an idea of the relative use in the Shafter area.

On the right, there is a wind rose diagram. That shows a predominant -- in this case, a predominant wind direction as being from the south. However, of course, based on this diagram, you can see that there -- the wind can blow from different -- from other directions as well, but predominantly, in this case, it's from the south.

It's important to highlight here that the selection of the 1,3-D, the pilot study area, was significantly influenced by the community. And as a result, you can see from the map that it -- the township that we're looking at, that's kind of blown up on the left side, actually envelops the immediate area around the AB 617 Shafter area, which is outlined in black. And the A there, the blue A on the chart for the dia -- the graph -- not graph -- the figure, essentially is showing the -- kind of like the location of where our ambient monitoring air station has been stationed there for a long time and still there.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: We've gone previously into a similar background on the July 9th presentation, but this kind of to help orient folks in

terms of context.

1,3-D is a widely-used, pre-plant fumigant that helps control pests and diseases in the soil. And i'ts often used to -- you know, to treat fields that for a -- that are used for fruit and nut tree -- nut production. The commodities that it's used for -- are commonly used for are strawberries, grapes, carrots, and sweet potatoes and such.

And, you know 1,3-D is a toxic air contaminant. And this is another reason why there's a lot of interest by the SRP. The use of this material, this fumigant, requires a restricted materials permit issued by the county ag commissioners. And, you know, the commissioners are our -- are DPR's regulatory partners.

To use the material, the grower must have -- must get a recommendation from a licensed pest control advisor, or PCA, some folks refer to them. The applications themselves must be supervised by a licensed certified applicator. So you can see that there's quite a bit of oversight and -- you know, that's needed to use the material -- to apply the material.

Specifically, DPR can also recommend conditions in the permit to the whole permit conditions to the county ag commissioners. For example, currently, this is how 1,3-D is regulated right now. It is regulated as

restricted material. So there are existing permit conditions that exist to help control the use of 1,3-D and therefore its emission as well.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: As a result of our previous presentation, the SRP shows some interest in hearing more about relevant health-based concentrations or thresholds for the mitigation pilot. As a reminder, you know, the aim of this program is to ensure that health-based acute reference concentrations are not exceeded. That's the goal of this particular -- particular program is to address acute exposure.

And I know for those of you who have been following the developments of 1,3-D, our Department has conducted human health risk assessments before, a number of years now. And we have calculated the reference concentrations for not just the acute but also for the subchronic and the chronic exposures as well.

And third, you know, to help kind of define what I mean when I say reference concentrations, that -- and I'll just read it out here. It's essentially the estimate of inhalation exposures to humans that are likely to be without appreciable risk of deleterious effects.

So in something -- in essence, we're using these reference concentrations as screening levels or screening

values when we compare it to monitoring data.

Specifically, you know, DPR is siting our reference concentrations that we develop in our 2015 risk characterization document. And we are focusing specifically in this program to address the acute scenario reference concentration for residents or bystanders, so not necessarily workers. And the concentrations that we're -- the reference concentrations that we have been looking to -- looking to focus on would be the 110 parts per billion that's protective of children's -- exposure to children.

There's also April an adult reference concentrations, however -- concentration. However, it's relative -- it's higher. Its at 367 parts per billion. So, you know, for the purpose of our work, we're really, really focusing on -- focusing in on 110 parts per billion.

Now, acute exposure to high concentrations of 1,3-D result -- could result in like upper respiratory symptoms in people. So this would be something like chest tightness, irritated watery eyes, dizziness, runny nose. However, I think the most sensitive in it's acute endpoint that's been documented, at least in lab animal studies, specifically body weight loss. So that's one of the -- one of the endpoints that we're looking to address.

And I want to point out, too, that, you know, I think -- you know, if we were able to address the acute exposure, lower acute exposure, there would be some beneficial decreases in terms of exposure on a subchronic and chronic level as well. So I just wanted you to keep that in mind as we -- as we -- as we think about mitigating the acute exposure.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: I mentioned earlier that DPR has a monitoring station in Shafter for some time. So here is a graph that shows the weekly 24-hour average concentrations of 1,3-D at Shafter. When I say weekly, it means that we -- you know, there's seven days out of the week. We sample -- we collect air samples in one of the seven days for a 24-hour period. So there's a -- it's a 24-hour average that you're seeing here.

As you can see, most of the levels here are very low, or in some cases, are actually below detection limits. Some data points do stand out, however. Note that I think the highest concentrations you see here is that -- it's to the right on the graph and it's about 51 parts per billion, which is still well below our reference concentration or screening value of 110. That's in the blue box on the left.

In fact, the highest 1,3-D concentration documented among all of our air ambient monitoring network -- air monitoring network sites was 110 -- or 111, actually, pardon me. And that was in Parlier in the Fresno area. That was from many, many, many years of monitoring many, many samples, from weekly samples over time.

And I want to remind folks that the exceedance of a reference concentration or screening level does not necessarily indicate a health concern, but it does indicate the need for the Department and, you know, and our regulatory partners to get involved in more in-depth conversation, and for us to do more in-depth evaluation of the circumstances to which resulted in the higher concentration.

So some folks may ask why we -- we are considering additional mitigation, especially if most of -- if all the monitoring data, particularly at Shafter, is showing that it's below reference concentration. And I do want to point out a few things and its -- they're captured in the box on the left of the graph.

And number one, I mentioned that we really only capturing one of those seven days each week. So perhaps the data that -- the data points that we're seeing are not really fully representative of the actual, you know,

ambient air monitoring profile in Shafter. That's one question.

Another one is that, you know, even though, you know, these are at the monitoring sites -- ambient monitoring sites in Shafter the community, however, they -- the areas or the space between the application sites in the larger area, and the -- and the monitoring site may actually have higher concentrations. That would make sense.

Oftentimes, there's dispersion between the edge of the field where applications are made. And, you know, you're essentially getting lower concentrations as you move away. So there could be areas that's between, you know, our monitoring sites and the fields that have higher concentrations.

Moreover, we've done some modeling with existing -- I mean with the existing parameters for applications. And it shows -- monitoring results show that reference concentrations may be -- may be exceeded beyond the current hundred foot setback that's in the current permit conditions these days.

So with that, you know, we -- we have interest in trying to fill in data gaps a bit more to try to better understand, you know, what -- what -- what's really going on. You know, are our ambient monitoring data really --

really giving us a really good idea of the local area exposure.

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PANEL MEMBER GLANTZ: So this is Stan Glantz. I just had a question.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

PANEL MEMBER GLANTZ: If you could back up. So a lot of those are zero. So does that mean those are days where it just isn't being applied?

DPR ASSISTANT DIRECTOR SINGHASEMANON: So remember, there are weekly con -- there are weekly -- a reflection of weekly concentrations. 1,3-D is applied really is in the season -- in the seasonal sense. And there's a lot of it going on in the fall, starting around this time of the year October/November. There is -- no applications are allowed in December. So applications pick up again in January, February, March and so on.

So, you know, it's -- it's being applied at sometimes, not certain times. Hopefully, in December, we're not seeing concentrations because there's not supposed to be application. But, you know, there is a bit of a lag when the material is applied or -- and then there's a lag where the material -- the gas would come out after the application. But generally, we wouldn't expect to see anything in December.

So it really -- I think it's really dependent on when the applications are made, where the applications are at relative to the monitoring site, right, where the -- which where -- which way the wind is blowing, how hard it's blowing. That's multiple factors that would lead to a result in what you're seeing at the monitoring stations. Is that helpful?

PANEL MEMBER GLANTZ: Yes.

CHAIRPERSON ANASTASIO: Nan, I have a related question.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

CHAIRPERSON ANASTASIO: So you've determined an acute reference concentration. But these are 24 hours measured concentrations. What was the time period in your health evaluation for the acute exposure, is that 1 hour, 8 hours?

DPR ASSISTANT DIRECTOR SINGHASEMANON: I'm sorry. Could you say the last part again?

CHAIRPERSON ANASTASIO: So you've got an acute exposure reference concentration.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Right.

CHAIRPERSON ANASTASIO: What was the time period when you were calculating the risk for that?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Well, the acute exposure for us is typically 24 hours. We were

trying to match --

CHAIRPERSON ANASTASIO: For you, it's 24 hours.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah, we were trying to match that

CHAIRPERSON ANASTASIo: Okay.

DPR ASSISTANT DIRECTOR SINGHASEMANON: So it's one day.

CHAIRPERSON ANASTASIO: All right. Thank you.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Um-hmm.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: So at this point, I'd like to kind of refocus on the pilot program again. And kind of, you know, really talk about the why and the how. You know, our objectives as we stated before is to provide growers and applicators with alternative application methods that would reduce 1,3-D emission to levels that are comparable to the use of total -- totally impermeable film, or TIF, tarps.

That's the idea. I think, you know, we could growers to -- to use tarps everywhere, but it's -- you know, we've learned that, you know, it's use can be somewhat impractical, can be expensive, and, you know, in terms of like the materials that's generated -- the tarp material that's generated after -- after the application, you know, you have to kind of deal with that material too.

So we wanted to give -- give growers and applicators some options to help with the reduction. And we're looking at reducing emissions by at least 60 percent. That's compared to the standard untarped applications. That's the goal of the reduction that we're looking for for these -- for the options.

In terms of the approach, in the beginning, DPR -- essentially, we worked with our -- or models, our HYDRUS Model and our AERFUM Models. HYDRUS model is really -- is what, you know, it predicts the behavior of the fumigant 1,3-D in the soil. AERFUM is essentially our air dispersion model. And it predicts what's going to happen once the fumigant leaves the soil and then goes out into the surrounding ambient air. So we use the models to identify various mitigation options that could make -- could make the reductions happen.

And the approach -- the larger -- the bigger picture approach involves getting growers and applicators in their study areas to select and use these options over the duration of the program, which, you know, we've been saying is one year essentially.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: So here's a high level overview of how the pilot program is developed. You know, planning for the program in these

areas started really in 2019 with the implementation that we are -- we are working toward is fall 2020, which is right now. In fact, that's what's going on and I'll be updating that a little bit later.

Certainly, the -- you know, the community of Shafter expressed a lot of interest in the reductions that we're trying to achieve. You know, they -- they were particularly interested in tarps as well, especially early on in the conversation.

--o0o--

DPR ASSISTANT DIRECTOR SINGHASEMANON: And that led DPR to engage in quite a bit of a discussion between -- among us, you know, a grower groups, applicators, county ag commissioners, and also the registrant, which is Dow AgroSciences. There's quite a bit -- quite a bit of coordination on that level.

The -- what we were finding out is that really what we were looking for in terms of data generation, what's critical, are field-level monitoring data from applications for using these alternative options. And again, you know, both to look at the acute exposure that comes off of fields and also to further validate models I just mentioned. And this is significant because, for us, really the models -- well-validated models are what we're going to be relying on heavily as we develop our future

rulemaking on 1,3-D or additional restrictions.

PANEL MEMBER GLANTZ: Can you explain what the actual mitigation is? When you say use of tarps, are you saying you inject the staff into the soil --

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yes

PANEL MEMBER GLANTZ: -- and then put a tarp over it to keep it from getting into the air or could you explain --

DPR ASSISTANT DIRECTOR SINGHASEMANON: I will.

PANEL MEMBER GLANTZ: -- the mitigation techniques you're looking at?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yes. I will actually do that in the very next slide. So this is kind of to set us up to talk about the options. So that's a good segue.

But I mean, I just do want to point out in terms of program development that certainly the -- you know, we had some impacts from COVID. It certainly impacted our ambient monitoring network. We are still doing 1,3-D in all -- in many sites. But it developed -- it impacted our work a little bit, our development off the pilot itself. But, you know, I think that's -- that's why we ended up shifting more emphasis to the field level monitoring than rather looking at some of the ambient monitoring data that I've shown earlier.

I think for -- I think after some discussion, we believe that -- you know, the idea here is to reduce 1,3-D concentrations in the applications. And if the current monitoring at our ambient monitoring sites are already showing very, very low levels or non-detect most of the time, I don't know if we will able -- to be able to actually see additional reductions from -- you know, from the pilot. So that was one -- one area where we feel like perhaps we should really focus more of our attention onto the field level monitoring.

And certainly, there was -- earlier on in the discussion of a pilot, there was interest from Dow AgroSciences in, you know, co-locating an ambient monitoring site next to ours in Shafter to -- to essentially help develop the monitoring profiles throughout the week. So the additional six out of the seven days that we weren't getting, that will -- could have been helpful. That was impacted by COVID. So that -- you know, it's not going to happen.

So, you know, but for us, I think it's important that we keep our -- our eyes -- our goals on the rulemaking and what are going to get us there are the additional validation from -- on the models used in the field data from the study.

And, you know, just to say -- just to point out

too that, you know, our weekly air monitoring data in Shafter is going to continue. It's going to go on.

CHAIRPERSON ANASTASIO: And can I interrupt for a second. I see that Kathie has a question.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

CHAIRPERSON ANASTASIO: Kathe.

DPR ASSISTANT DIRECTOR SINGHASEMANON: And Kathie may be on mute.

CHAIRPERSON ANASTASIO: She is on mute. I'm going to allow her to unmute herself.

PANEL MEMBER HAMMOND: Yes. Yeah, I tried and it didn't work.

Okay. Thank you. Some of this follow-up on what -- Stan's questions and then some on what you've just said. Stan asked about when you had actually -- the relationship between your monitoring and when the applications had happened. And I think it would be very useful to indicate on the graphs that you have when there has been application. And not only that, as I look at the wind rose that you showed earlier and the pilot program, there are a lot of areas that apply the material that very rarely have the wind blowing from them.

So I think it's also worthwhile to have that kind of information. So perhaps a more detailed, impactful examination of, I don't know, the day of application, the

day -- the day after application, and analyses that have been done there. And that would be good.

So we could look at that and -- as distinct from sampling that's done when there hasn't been any application. And then the other thing is you were talking about moving from just the environmental sampling at one location to doing -- it sounded like you might be looking at field-level monitoring, which I applaud being concerned about worker exposure.

And I guess I -- I'm thinking about the AB 617, which I think of as the community, but I think that we -- workers should always be seen as members of the community. And there is certainly no doubt that the workers are among the impacted people and environmental justice issues apply. So that I think it's important to include them more. So I'm glad to see that you're -- it looks like that's what you're doing by doing more field-level monitoring.

But again, all of that monitoring should be put in the context of whether or not there's been an application in recent times that would be enough to even ex -- have any expectation of something to be --

DPR ASSISTANT DIRECTOR SINGHASEMANON: I appreciate t. That's a good observation. And I think I want to address the worker health aspect or the two that,

you know, DPR has been working on separate mitigation on worker health in terms of 1,3-D. And obviously, they -- they're wearing -- you know, the folks that are there were in the -- the concentrations maybe relatively high in -- during the application. They are wearing personal protective equipment.

So there's a number of safeguards that are provided to the workers in relation to the 1,3-D application. But, yeah, we do definitely take them into consideration, because they're going to be the one really exposed, particularly during the shorter exposure periods for this.

PANEL MEMBER HAMMOND: And if you're doing that, that includes the importance would be to do personal monitoring for the workers --

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yes.

PANEL MEMBER HAMMOND: -- as distinct from just area monitoring.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yes. Yes. We -- that's actually -- have been done in the past by our Worker Health and Safety Branch to do personal monitoring of the workers and seeing their specific exposure, so -- but that was a good observation for sure.

Okay. Can I resume real quick here?

CHAIRPERSON ANASTASIO: (Nods head.)

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DPR ASSISTANT DIRECTOR SINGHASEMANON: So I think maybe it was Glenn[SIC] that asked earlier about the options. So here are kind of like a simplified menu of our reduction options. And this is, you know, current as of essentially September.

So now right now -- you know, the reason we're -- we're trying to have some options in terms of applications for -- alternative applications for 1,3-D is that there's no commercial scale alternative. So it's -- you know, otherwise, it would be easier to just kind of point folks to a different -- to a different active ingredient, to a different pesticide. But, you know, 1,3-D is obviously very important. A lot of use in the state. And we understand that some of these options are going to be more palatable or more feasible for the growers, as well as the applicators to work on.

What I'm showing on this table here are individual options. And, you know -- but we can actually combine some of these options. And the orange rows are these kind of specific options. Generally, they come out to -- the combination that seems to be working -- that we've looked at comes out to about 12 methods.

I say methods, in this case, because the method essentially would represent a combination of options or a

single option. And these -- you know a grower would essentially pick an option or one of the 12 methods. And it would dictate some of the -- you know, the -- the other factors that are in gray.

And, for example, if a grower picks, you know, a deeper injection, you know, for the material and also a high soil moisture, that would -- you know, they would have to think about that -- how -- what would that mean in terms of like the size of the block that they want to treat, because that could influence the reduction -- or the application rate. And it could also -- it would influence the setback distance. A setback essentially is a distance no -- that no applications can be made, you know, between an occupied structure and the -- you know, the application.

So, you know, there's a bunch of different options that could lead up to a number of methods. And again, once -- once -- the grower would have to first pick what's in the orange boxes first and then think about, you know, how large the treatment size is going to be and that's going to impact the rate, the application, and also the type of setback or kind of a buffer distance that's necessary here.

Tarp. As I mentioned earlier, it's also one of the options, Tarping. So we're not necessarily taking

that out. And also -- there's also an option for partial TIF tarping. For example, half -- you know, every other rows would be -- row would be -- would be tarped and then every other row would be opened. That's what's considered -- what partial tarping is.

And, you know, at DPR we have a table -- we have a larger table that shows multiple applicate -- multiple, you know, options and also the multiple combination of options with methods -- what I call methods. That could be -- you know, could be easy to see for folks that are interested. We're updating that right now.

I crossed out the post-application water seal here to show folks that because we haven't been having a lot of conversations with growers and applicators, after a lot of -- a lot of talking, we just -- we found out that the water seal option is not very practical. You know, it's hard for them to get the equipment, to work with the equipment when there's a lot of water or, you know, heavily water logged soils on a property.

And water costs money, and in some of these places it costs a lot of money. So it's not really something that's practical. So after deliberating with the growers and applicators, we felt like that was a productive outcome. We found out that that's something that we thought would work. It's necessarily practical.

But the other ones right now, you know, the partial tarping, the injection of the various soil depths, and also use -- applications at higher soil moisture, which helps keep sealed -- help to seal the 1,3-D that are still on the table.

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CHAIRPERSON ANASTASIO: Nan, I see a question from Beate.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

CHAIRPERSON ANASTASIO: Beate.

PANEL MEMBER RITZ: Yeah, so just so I understand better what this does, these reduction methods. Will that actually contribute to the agent being broken down, so that it doesn't escape at all or does it mean it just will escape at a slower rate, so the acute -- the acute reference value will not be hit?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah, I believe it will be both. I think typically when we -- when we think about these options, we tend to think about whatever it takes, so that, you know, 1,3-D will not leave the soil. Whether it breaks down in the soil or it's just kind of kept in the soil, it's not as important.

I think, you know, the idea -- you do want to keep the 1,3-D in the soil as much as you can for efficacy sake. You want it to actually kill the pests, be

effective. So the idea is, you know, it's important to keep the material in the soil. But obviously, we don't want materials -- you know, we want as little as possible to come off of the field and get into the air, so...

Just a quick update on the status. As I mentioned, we are entering the field work phase. And, you know, we've been working a lot with applicators mainly, commissioners, in some sense, and some of the growers to identify some of the initial fields that we want to look at. I do know that Dow AgroSciences is actually doing a study as well, a very similar study, where they're looking at two or three different opt -- alternative options.

So we're collaborating with them. We'll be doing some of the monitoring work for soil monitoring, you know, soil analysis. We will be reviewing their protocol -- their monitoring protocol to make sure that it's sufficient.

So that work I know is starting I believe next week. It's in the Parlier area. Actually, no, is it Parlier? No, I think that one is more in the -- in the Delhi -- Merced, Delhi area already.

So that's something that's already happening. That's not something that we're including in our pilot, but that's some work that's related to that. We are still looking to identify the fields to monitor. There's been a

number of them that have came up for -- that's been recommended. But, you know, we have very specific site criteria, where, you know, we don't want obstructions around the field. We need the field to basically be -- be -- be ideal in terms of generating the data. That's really important to us.

So we're continuing to work with the different groups. Our priority area, in terms of society providing a -- getting a site is Shafter. That's going to be number one. You know, if we can't get in Shafter at a certain time of the year, we'll look in the Parlier area, which is where our other study -- study area, and also in the Delhi area, which is our other study area.

I think -- yeah, like I said, you know, we still really need to coordinate closely with the growers, and applicators, and the commissioners this time. We are -- our field folks are constantly in conversations right now with -- with these groups.

And, you know, keeping the community informed is really important. I know that myself, our Director, Val Dolcini, and a number of our staff are -- are engaged with the Shafter community steering committee. It's a monthly -- it's a monthly meeting. The next actually is this Monday, coming Monday. And now it's formed -- recently formed a pesticide subcommittee. So we -- we

endeavor to -- you know, to engage the groups continuously to give them updates, where things are, where things are going.

I know in those groups, we don't necessarily just talk about the mitigation pilot, but we also talk about the notification work as well, because there's been a lot of interest in that. Obviously this talk is about mitigation. I'm not going to go into the notification aspect of it, but I know that's very -- you know, a very important aspect to the community.

That said, back to the mitigation, we -- DPR is targeting about four or five applications in our three study areas. And again, if you can get all of them or most of them in a Shafter area, we would. We'd like to at least get that much.

You know, as we look at this -- you know, this is really kind of a voluntary type program. You know, we're hoping that this is almost like demonstration to the grower -- other growers, not just in the Shafter area, but just in other areas where 1,3-D is used.

It's important to -- you know, to show that -- that these alternatives are feasible and they can be done. So it's spread -- to spread the success of the demonstration.

I mentioned before that the fields needed to meet

certain selection criteria. That's why we can't just do every field that comes up. You know, we have to think about, you know, would that field result in us, you know, get good data. I mentioned earlier, I'll say it here, that you know the registrant is investigating other methods nearby.

Yeah, I think I touch on this point right here, on the bottom -- on the bottom bullets.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: And to kind of give a visual about what we're planning to do in terms of monitoring, I know there's two schematics over here, since one is like a rectangular field, one is a square field. And the circles and stars essentially represents the sampling points, where we're going to be locating our samplers. And, you know, I think we -- ideally we're looking to do 12, maybe 16 around the field, spaced in a certain -- certain pattern to get coverage.

And I'm showing a diagram on the right here that's -- it shows that there's going to be variable height where we can set the sampler to take the samples, to take -- you know, to collect samples. They can be adjusted. We won't have this many points of sample on our -- on our -- on our sampling point, but, you know, we're tying to locate it in an adult breathing height --

or rather a breathing height on the field to give us a representative data.

And, you know, it's kind of a little bit misleading to have temperature gauges or, you know -- you know, sensors for -- to measure wind speed on the sampler. We won't have that. In reality, what we will have is a single monitoring meteorological station, a weather monitoring station, on-site. And it's going to have -- measure the meteorological data, wind speed, temperature, and so on, a number of things actually from two different heights. And that will -- what will be used to help feed our -- our modeling inputs.

And our work here is not just one-time thing. It's not just one time during that one day, during the application. It's going to end up stretching over seven days to help capture the acute -- you know, what's coming off the field and the acute -- in the period and also beyond.

And to give you an idea, this is not -- again, not 10 samples, not 20 samples. This is going to be more than -- more than a hundred samples, maybe even, you know, 200 Samples per field. So it's intensive in terms of the samples that it would generate.

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DPR ASSISTANT DIRECTOR SINGHASEMANON: And the

this is my last side in terms of kind of redirecting this a little bit and some considerations for the SRP. Obviously, this is the beginning. We're starting. So, you know, perhaps in the -- at a future SRP meeting, we can get some feedback on, you know, what we've identified in terms of the field, what we've selected, and what are the methods that we are -- we've looked at perhaps in -- I know that the SRP, you know, have these regular meetings, so perhaps earlier next year.

And then also once data are generated from -- you know, from the various -- from the various fields, you know, compare and discuss the methods, you know, how do reductions look, are they -- are they actually getting the reductions that we're looking for at 60 percent or more, and also to compare and discuss the modeling and monitoring results that come out of the -- come out of the study. That's probably more longer term, because that's -- you know, we want that to be closer to probably about a year from now to be able to do that.

So leave it kind of open-ended there, because I know the SRP may actually have its own idea of what -- what other types of input or interactions that you want us to provide on this.

CHAIRPERSON ANASTASIO: Thank you, Nan. Appreciate your presentation.

Panel members, if you have questions or comments, please raise your hand and then I'll call on.

Mike.

PANEL MEMBER KLEINMAN: Yes. Thank you, Cort. Nan, could you go back to your slide number 11, the field monitoring schematic.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Certainly.

PANEL MEMBER KLEINMAN: Yeah. First, I'm not sure what -- what are the circles and what are the stars?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah, this is kind of a general schematic just to kind of show the arrangements. The circles and the stars represent what's on the right, essentially a sampling point. In reality, it would basically be a pole, with a pump, with sorbent tubes. That's what we're going to be collecting the air samples with. And, you know, we're going to be going in intervals during the seven days to collect samples. Our field folks are going to go in there to do that. So the circles and stars represent the sampling points that's going to be spread around the field.

The dark part of the diagram would be the actual field where the applications take place. So as you can see, all the samplers are going to be placed around the edge. Oftentimes, we call this edge-of-field sampling or around-the-field sampling, around-the-edge sampling.

You'll hear multiple things called -- that it's called. That's what at they are.

PANEL MEMBER KLEINMAN: In conjunction with this, you also have the sampler -- your monitoring samplers running in the community.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Correct.

PANEL MEMBER KLEINMAN: And that's only going to be one day over of every six.

DPR ASSISTANT DIRECTOR SINGHASEMANON: One out of seven, yeah.

PANEL MEMBER KLEINMAN: One out of seven.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah. That's what we call our ambient monitoring -- monitoring site. And it's been ongoing -- it's been going on for a long time. But I think, as I was trying to make the point earlier on the presentation that I think, you know, our -- the -- our best data that's going to be useful for the pilot and to -- and also to help support rulemaking on this one in the future would be the work around the field. This is going to be the work that's going to generate the most useful information for validating our -- validating our models and also for identifying some of the local -- you know, the -- the acute exposures.

PANEL MEMBER KLEINMAN: I think that's great, but I guess the, you know -- you know, knowing what is

actually happening in the community as you're going through this, it might -- you know, and given that your sampling frequency is rather limited, you know, the -- you don't all -- as Kathie mentioned, the wind direction is generally from one direction and all -- you know, these fields that you're going to be monitoring, you know, looking back at the picture -- let me see which slide it was -- slide number 3 where you have your overall map.

So looking at this map, are -- which are the fields that you're actually going to be working in? Is that in the -- the highlighted dark square with the -- with the designated sites and M2752 and -- or S2? Yeah.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah. So Mike, the dark boundary and the number you just read, that -- that is the township in which the AB 617 Shafter area is included in.

PANEL MEMBER KLEINMAN: Um-hmm.

DPR ASSISTANT DIRECTOR SINGHASEMANON: So our study area, what we call our study area, would be the four squares that's showing that's being blown up on the left side of that particular -- that figure. So, yeah, I mean, obviously Shafter right in the midst of an area that there's actually relatively high use around the -- around the community. This is why it's -- you know, I think it's a -- it's really important for us to take a look at the --

at the emissions in this area. We've had -- we've had the -- the blue diamond there is our ambient monitoring station. The monitoring station has been there for a long time.

PANEL MEMBER KLEINMAN: Okay.

DPR ASSISTANT DIRECTOR SINGHASEMANON: And again, we can't control the wind direction. Although, like I said, it's predominantly from the south, but it does shift. So, you know, looking at it one day out of the week is limited. And that's one of the reasons that we want to move ahead with the pilot is to better understand, you know, the -- you know, what's coming off the field and how it could impact these -- the ambient sites during the rest of the week. It's hard in sampling when you're -- that frequency is really important. But, you know, the ambient monitoring sites, you're really looking at more long-term exposure. So it's not ideal to try to interpret acute exposure using ambient monitoring sites like this, especially when it's farther way from the applications. So there certainly are implications in terms of like data interpretation, you know, that -- which you had just brought up.

PANEL MEMBER KLEINMAN: The main limitation I guess, you know, that forces you to do this limited sampling is, I guess, it's pretty expensive to do the

analysis and also changing filters on a regular basis, because -- it would really be -- I'm wondering whether you could use -- change your sampling strategy to collect daily filters, but analyze a weekly composite and then only look at individual days for weeks where you have a high level on your composite sample. Would a strategy like that work?

DPR ASSISTANT DIRECTOR SINGHASEMANON: I see what you're saying. So, you know, again, the mon -- our ambient monitoring air station has been there for a long time. And it exists within a particular monitoring program that's implemented by our air monitoring program -- our air program. So, you know, they've come up with this kind of a long-term way of assessing the air concentrations.

Something like that, we would have to kind of discuss, because it has an impact, not just at Shafter, but it would have an impact beyond to all our ambient monitoring stations. You know, we have -- we had eight stations the last couple of years. It's been dropped down more right -- dropped down to less now, because of funding considerations.

So, you know, it's something that we have to kind of could take a look at a larger -- a larger scale scheme of things and not just for this particular pilot. So it

just happens to be that the ambient monitoring air station for Shafter is here in the study area. But, you know, again, I'm going to shift again the focus more onto the edge-of-field work that's going to give us the data that I think we're particularly interested in.

But I see what you're saying and I can certainly talk to our staff about that -- about your idea, in terms of how we'd inform -- you know, would it better -- would it better inform, you know, our assessment, have a better picture of in terms of the exposure relative to what we're doing now. So I could bring that up with them.

PANEL MEMBER KLEINMAN: Thank you.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

CHAIRPERSON ANASTASIO: Thank you, Nan.

I see that Paul has a question.

Paul, we can't hear you. I don't know if you're muted.

Oh, yes.

PANEL MEMBER BLANC: Yes, I'm unmuted. Thanks. Sorry.

I guess I have a more existential question, which is if all of this -- how -- how can this great investment of work be generalizable to the broader question? And it seems to me that unless what you're doing in your pilot is setting up a process, which would be generally applicable

to a series of chemical exposures as they come up, we would -- it would probably take us a hundred years to address even a short list of exposures. It's not that I don't think Telone matters, but this seems pretty intensive and glacial for a single exposure at a single site. It may be clear to the agency why this work is generalizable, but I think it would be worth stating that explicitly or illuminating for us explicitly.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Paul, I guess I'm trying to better understand or frame your question. And when say generalizable, what do you mean exactly by that?

PANEL MEMBER BLANC: If we came up with a second chemical tomorrow, would you be able to use exactly the same approach for it and not have to pilot and just do it?

DPR ASSISTANT DIRECTOR SINGHASEMANON: I think it's -- the work is really focused on the modeling. And, you know, our ability to -- to validate the models and do it well enough that we can rely on it for future prediction.

But we would -- you know, from a different active ingredient, we would probably need -- it needs to be modeled differently. There would be different inputs and we would -- we would likely need data that's -- field data that's generated using studies with that, say, fumigant

for example -- fumigants.

PANEL MEMBER BLANC: Yes.

DPR ASSISTANT DIRECTOR SINGHASEMANON: So I think the framework is there, but the specific results from this particular -- you know, for 1,3-D I don't think is necessarily portable to another AI that easily. We would have to structure it and tailor it to something more specific for whatever that particular next AI would be.

PANEL MEMBER BLANC: So that probably is the correct industrial hygiene response. I guess I'm curious from the other panelists what the larger public health overview might be.

CHAIRPERSON ANASTASIO: Yeah. Nan, I would hope that the model -- you know, you test it with 1,3-D, but I mean it must be volatility, and soil reactivity, and water solubility, these all must be modeled parameters and you can tweak them, right --

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yes.

CHAIRPERSON ANASTASIO: -- for the next compound to at least get a decent idea of off-field exposure to a whole range of pesticides.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yes. Yes. No, I think that part is certainly true. I think we would want to set -- to still validate the field study using other AI though, because, you know, modeling it's like --

you know, if you can validate, especially if you're going to use the results to support regulation, we want to like at least validate them. We may not need a scale of study this big where, you know, we're looking at multiple areas, many, many fields. Maybe we're looking at one or two studies at most, to -- you know, assuming -- assuming that we're looking at similar types of application options to get our data, but that's a good point.

PANEL MEMBER BLANC: Cort, I'd just be curious to have some of the other panelists weigh-in on this -- this more global question.

CHAIRPERSON ANASTASIO: Sure. I see Lisa has her hand up. Lisa, did you want to weigh in on Paul's question or did you have a question?

PANEL MEMBER MILLER: I actually had a different question

CHAIRPERSON ANASTASIO: Okay. So could we hold that for a minute then --

PANEL MEMBER MILLER: Sure.

CHAIRPERSON ANASTASIO: -- and see if any of the other panelists would like to weigh in on Paul's questions of the wider generalizability of the pilot program?

Joe.

PANEL MEMBER RITZ: So does --

CHAIRPERSON ANASTASIO: Or sorry, Beate.

PANEL MEMBER RITZ: Yeah. So having been -- being in the field of building models, land-use regression models for air pollution, I know that there are generalizable ways of looking at these models. We know what kind of like volatility was mentioned, the amount of, you know, ingredient injected, et cetera, so those -- those are -- those are parameters we will use in every single model, but we also know that we have to validate the model. Then I guess the bigger public health question is how -- how much do we have to -- how far do we have to go to validate the model before we can say, well, this is a general model that works, and, you know, we -- we can -- we don't have to invest every single time this same effort of model validation again.

It also would be good to understand whether this model -- what really the most important contributors to this model or its validity are. And maybe those are things that can be stated very clearly after this pilot program knows this or has done this, so that, you know, we -- we generate some more general knowledge about model building, model validation, that we don't have to reinvent the wheel every time a different agent is being evaluated, and that that should be one of the goals of this pilot project and the investment in it.

CHAIRPERSON ANASTASIO: Thank you, Beate.

Joe, did you have a comment related to Paul's question or a separate comment?

PANEL MEMBER LANDOLPH: Related to Paul's question. Can you hear me?

CHAIRPERSON ANASTASIO: Yes. Go ahead.

PANEL MEMBER LANDOLPH: Yeah. Yeah, Paul, thank you for asking that question. I was thinking about this too, a long similar lines of Paul's. And my question to Nan and his colleagues would be is there any possibility of replacing Telone with some compound that's less toxic to humans? And I'm thinking about this and it just seems like we'll be doing this over, and over, and over again. And what happens, do we eventually get to a point where there's so much pesticide in the soil that you have to scrape off the top couple of feet or something say after 50 years? What kind of thinking have you done along those lines.

And now with the advent of all these elegant molecular biology tools like CRISPR-Cas9, are there ways that pest populations can be modified, so that they don't cause so much of a problem or create other pests which will attack these pests, and go at it in a biological way, is there anything going on there?

DPR ASSISTANT DIRECTOR SINGHASEMANON: So in terms of alternatives, I had mentioned earlier that, you

know, right now there's no good alternative for 1,3-D, in terms of this specific use. However, that doesn't mean that, you know, there's no -- there won't be alternatives in the future. You know, we -- we can get registration requests every once in a while for a new material, for like a fumigant. It doesn't come up very often for fumigants. It happens a lot more for other types of products, but it's possible.

I think if there were alternatives out there, we wouldn't be really thinking about the pilot program. We wouldn't really be thinking much about mitigating use necessarily. Maybe we would -- we would be looking at other materials.

I do know that the Department -- you know and I can't speak on the specific -- some of the specific pest -- pest management alternatives you brought up, but I know that we're committed to really -- to exploring the IPM mass -- integrated pest management part of it deeply. That's been a commitment from our Director. And it's really supported by our agency as well. So, you know, I would say that that type of work is -- you know, it's important and it's not something that ignore, so.

PANEL MEMBER LANDOLPH: Thank you very much.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

CHAIRPERSON ANASTASIO: Okay. Lisa, sorry to

keep you waiting. Go ahead.

PANEL MEMBER MILLER: I just have a practical question related to this. I'm not familiar with how these materials, these pesticides are applied this -- this particular pesticide is applied. Excuse me. Is the equipment used to apply this material consistent across the Board between fields. And again, I'm thinking, you know, from a practical perspective, how much variability that might impose.

And you mentioned the timing -- you know, seasonality is important in terms of the application process. I get that. Do weather conditions also -- weather conditions during the application process, I would assume, would add some variability to the amount of material that actually gets into the specific field that you're sampling versus elsewhere. Is that taken into consideration during the application process itself?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Boy, that -- I wish Edgar Vidrio was here. He'd be able to answer that question very well. He's very familiar with the applications and how it's done. I'm not so much.

You know, I -- I want to say that it's some of -- a lot of the equipment that's used is consistent, because there's only, I think, two, or three, or four applicator companies that actually does this work, but it could be

that they have different applica -- you know, application equipment for different situations. I really don't want to answer a question that I'm not super familiar with, but, you know, that's something, if possible, we could follow up on. I think that's a good question.

In terms of like the, you know, environmental factor during application, I think that's certainly important. That's one of the reasons that we have weather stations out there when we're looking at -- when we're collecting data to make sure we understand the circumstances of which the -- you know, the -- what we're detecting is -- you know, it's been generated at.

So, yeah, and I can't really answer too much more about the -- the app -- the equipment question. But, you know, maybe there's an opportunity to kind of like follow up on that. I don't want to misinform people, so...

PANEL MEMBER MILLER: Yeah. I'm just wondering whether that might influence your modeling.

Thank you.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Thank you.

CHAIRPERSON ANASTASIO: Thank you, Lisa.

Mike, you have a question.

PANEL MEMBER KLEINMAN: Yes, I do. Going back to Paul's point about generalizing. You've got several different mitigation approaches that might be taken and

different application times and whatever. In order to really generalize, you really need sort of -- you know, some kind of systematic approach to generating the data and analyzing the data. And have you given thought to how you're going to structure the -- the database and the acquisition to give you a good chance to be able to interpret it and generalize it going forward?

DPR ASSISTANT DIRECTOR SINGHASEMANON: I know that our staff have done these type of studies, the field studies, before, and involving 1,3-D as well. So I know there is -- there's an existing sort of like a database-type structure or data analysis framework that exists. You know, we've done some of these type of studies before in the past. We have a guidance that we work off and that we -- you know, we -- we used, that we tell the registrant, for example, that are doing their studies soon, we want them to follow that guidance. So there is a framework in place that's been developed over the years. 1,3-D is not something new to us. It's been around for a long time and we've studied it for a long time too. Did I answer your question there, Mike?

PANEL MEMBER KLEINMAN: Well, I guess what I'm asking about is this is a voluntary program and different fields are going to be treated in different ways at different times. And, you know, that makes it difficult,

so if you have one field where they're doing a deep injection and on another field where they're using a tarp, and they both do this at the same time, how do you disentangle?

DPR ASSISTANT DIRECTOR SINGHASEMANON: That is one of the site criteria requirements that we have. We don't want applications occurring next to each other from a certain -- you know, we would need a certain distance in between. I didn't go into detail on that too much, because I thought that might kind of, you know, derail the focus a little bit. But that's something that we are working through in terms of like determining which field we want to -- we can monitor.

Unfortunately -- you know, I mean, if we didn't have much in terms of, you know, how -- how the type of criteria are for selection, we would get more fields and we would already be working. But because we're very particular about, you know, not trying to get interferences from nearby fields, or nearby structures, or orchards, you know, that's -- that's something that we have to kind of work through.

CHAIRPERSON ANASTASIO: I think part of Mike's quest --

PANEL MEMBER KLEINMAN: Thank you. That -- that's very helpful.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Thank you.

CHAIRPERSON ANASTASIO: Yeah. And Mike, was part of your question more about the variability of the different applications? It's something I was wondering about too. So, Nan, you talk about having four or five applications that you'll be able to study, but you had 12 methods, you know, either individual or combinations of methods that you hope to evaluate, so it doesn't seem feasible with only four or five applications. Can you talk a little bit about that?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah. And so, you know, we were trying to generate as many combinations of methods as possible as -- you know, for the -- for the benefit of the growers and applicators. So there's, you know -- there's more than just one way of doing something. So we're giving them variety.

Now, you know, we can only do so many monitoring, like as mentioned, at least four or five. The Dow AgroSciences is going to be doing three. So, you know, there's -- hopefully, we're going to cover a number of methods. But remember too that the methods we're going to up monitoring are going to be the methods that the growers and applicators choose. So there is a bit of a filter in terms of what we'll look at.

Maybe some of the additional -- some of those

methods won't be so well received beyond what we already though. So therefore, we won't be able to look at it, because it's not going to be used. But that's a good -- it's a good preview of like, you know, what we would do in terms of future rulemaking. Well, let's not put that option in there, because that's not going to work. We've learned that from the pilot study, that's not going to work.

So that's how I envision us being able to look at these methods. It's a -- there's a filter of what the growers and applicators can do and then there is what in reality, you know, what we can actually monitor.

It's a bit open -- a bit of an open book, I have to say. It's not like it's already pre-set this is what we're going to look at, what we're going to do, but that's just the reality of it.

CHAIRPERSON ANASTASIO: Thank you, Nan.

Beate, question.

PANEL MEMBER RITZ: Yeah. Actually, question/comment. If I remember correctly, last time when we heard about this already, the predictions from the model were not very good. And I'm wondering -- of the monitoring data. So I'm -- and, I mean, in R square measures, from what I remember. I have to go back to it, but I was quite surprised how little it predicted. Is

there an exchange between the people who are building the mode and the people who are doing the monitoring what really the parameters are you need to absolutely measure in order to improve your modeling?

DPR ASSISTANT DIRECTOR SINGHASEMANON: So, yeah, I don't remember exactly what you're referring to, but -- in terms of the question of the modelers and the folks who generate the data. Our air monitoring -- our air program, both groups of the modelers and also the field folks are in the same program. And there's quite a bit of collaboration between them. So this -- to me, this is a constant part of our work is to when we were -- especially when we're doing validation is to make sure that the modelers are talking to the field folks, you know, the field study folks who are generating the data. It's all -- it's very -- it's just a back and forth. So it is something that we integrate into our regular -- the regular part of our work.

And again, when we generate the data coming from the study, it's going to be more of the same, you know, most groups working together to get the result.

CHAIRPERSON ANASTASIO: Thank you, Nan. Thank you, Beate. Ahmad, do you have a question?

PANEL MEMBER BESARATINIA: Oh, hi. Yeah. I might have missed, but do you have any plan perhaps in

your pilot program or in the future to collect personal dosimetry data from users, for example, from residents, or from farmers, or applicators how feasible is it to measure the concentration of these compounds or its metabolite in say exhaled breath or, blood plasma, or urine of individuals who are exposed?

DPR ASSISTANT DIRECTOR SINGHASEMANON: I mentioned earlier that we -- you know, we do work on the worker health and safety aspect. And those -- of course, those are exposures that are relatively high. They're in the fields or they're around the fields doing the applications or, you know, helping with the application.

In terms of, you know, monitoring bystanders or residents, that's not something that I'm as familiar with. And I think there's probably -- that's probably work that's been done, you know, by academia more. It's not something that I think that our Department engages in historically by monitoring, you know, residential bystander level type exposures.

That's why we do a lot of the modeling to kind of help inform us of, you know, what the concentrations would be, the exposures would be. And, you know, we -- we can estimate the risk based on, you know, looking at various threshold, affects thresholds and so on.

That's the best -- to my knowledge, that's

what -- you know, that's what I -- that's what I'm seeing, so...

That's a good question though.

CHAIRPERSON ANASTASIO: Thank you, Nan.

We're running a little behind schedule, so I'd like to move forward.

So this is the time for public comment. So, members of the public if you'd like to participate or ask a question, you can either do it by raising your hand and I'll call on you, or you can put it into the chat. Either way should work.

I know that some people have had questions already in the chat, but the chat is a little chaotic. So if you have a question, please retype it and I will state it and then ask the relevant expert to respond to it.

MS. LOVE-LAZARD: Cort, can I just jump in before we do that? When you do ask your question after you've raised your hand, can you state your name just in the interests of if there's anything follow-up we need to do, so we know who everyone is.

Thanks.

CHAIRPERSON ANASTASIO: Sounds good. Thank you, Christal.

Okay. I see a questions from Mark Weller. Mark, go ahead.

MR. WELLER: Thank you. My name is Mark Weller. And given 1,3-D is a carcinogen, where long-term exposure is a factor, mitigating for acute exposures won't necessarily address chronic health threats, since the amounts can be much smaller. I'm told this meeting is only about acute scenarios, but will we also engage our Scientific Review Panel for chronic scenarios in Shafter, and if so when? And shouldn't we be trying to prevent cancer now rather than putting that off for later?

Thank you.

DPR ASSISTANT DIRECTOR SINGHASEMANON: So is that more of a question rom the SR -- for the SRP then, I think.

CHAIRPERSON ANASTASIO: No, it sounds like a DPR or maybe OEHHA question to me. Nan, can you talk about, are you interested in -- or is DPR doing anything related to reference concentrations or cancer potency factors for long-term exposure?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah. And so, you know, I mentioned that we have collected data over the long term for Shafter and other air monitoring network locations. And, you know, we look at not just acute but we look at the subchronic and also the chronic exposure as well. And the chronic one would be more relevant towards something like -- like cancer, you know, because it's a

likely carcinogen.

The -- I think what's important is that, you know, I've talked about how -- if we were able to try to address the mitigation on the acute level, that it would help somehow reduce exposure -- general exposure, so that it's part of the exposure profile for a chronic period, that that would -- the exposure would be lower as well. You know, I'm not going to engage and say, well, how -- how low is that -- you know, what reduction would that mean, in terms of the chronic exposure. That's for another conversation.

I do know that, you know, as we're looking toward doing rulemaking for 1,3-D, that we're going to be looking at both the acute exposure and also the chronic exposure. So that's my understanding where the Department has been heading and we've had our conversations with our -- with CalEPA. So, you know, we're really well kind of locked arms in what we want to do in terms of rulemaking.

I believe that's going to be addressed more in that aspect of it and not -- and not in the period of this study, obviously, because a study to kind of -- to reduce acute exposure.

CHAIRPERSON ANASTASIO: So, Nan, are you saying that DPR is developing a chronic health value?

DPR ASSISTANT DIRECTOR SINGHASEMANON: The -- we

have the chronic health value. We have subchronic health values as a matter of the next level of mitigation. You know, we -- in 2016, we developed permit conditions and we came out with a risk management decision to address the chronic exposure of 1,3-D so that -- there's already existing mitigation in place for that. Now, whether -- or, you know, whether we want to further re -- to further advance that or, you know, reduce the -- you know, the increased protection from a chronic exposure, that's what I'm saying is going to be evaluated when we're -- when we're bringing this back up for rulemaking.

CHAIRPERSON ANASTASIO: I see. Thank you.

Well, the Panel would be very happy to help you evaluate a chronic exposure for 1,3-D or any other pesticide.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Thank you.

CHAIRPERSON ANASTASIO: Okay. I see a question in the chat. Let's see sere here.

This is from Amy Kyle. How much of the pesticide exposures in this area are represented by this compound? So I believe that means out of the total active ingredient applied, what fraction is 1,3-D, because Amy points out that AB 617 is about addressing community scale for air pollution. And how are we getting to community-level concerns pesticides overall?

So, yeah, to what -- so can you talk broadly about that, Nan? You know, why the focus on 1,3-D, is that thought to be a big component of the pesticide toxicity in this area or how does it compare to what else is being applied?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah. Again, this is a -- this is a great example of, you know, just having -- of talking to the community and working through AB 617 and the steering committee -- community steering committee. So, you know, within the actual CERP document that -- the emission reduction plan, there are very specific references to 1,3-D and the desire to have lower exposure in the community.

So this is something that the community identified and, you know, I know that we've provided information on the material and on 1,3-D. In the past, We've had staff talk about use, so such -- you know, these kind of use maps have been provided. And, you know, folks live there. Folks know through, you know -- you know, talking to growers, you know, whether it's interacting with the ag -- local ag commissioners that 1,3-D is something that's used heavily in the area. So that's not a mystery. This is something essentially that the community identified and that's why, you know, we're interested in addressing this issue.

And obviously, there's 1,3-D use going around other areas as well in the state. It's not just -- just in the Shafter area.

No, you know, Shafter is really in the middle of a large productive agricultural area and so you're going to have other pesticides that are used. But perhaps those pesticides are just not as -- you know, as not in the -- in the -- front and center in the interests of the community and 1,3-D is, because, you know, it's a fumigant. Some of the other pesticides are not necessarily a fumigant. You know, they're applied in different formulations whether they're liquid, whether they're solid and off-site movement is not -- you know, it's not as significant potentially as 1,3-D -- or at least the perception that off-site movement is not as significant. So that would be my take on, you know, my response to that question.

CHAIRPERSON ANASTASIO: So has DPR done a calculation of relative risks from various pesticides in the Central Valley? Does 1,3-D pop up as one of the major contributors.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Well, if you start talking about risk, I'd go back again to where the results from our air monitoring network. You know, we present -- we present the data pretty routinely in public,

and, you know, if you're looking at 1,3-D and you're looking at screening levels, whether they're acute, whether, you know, the subchronic and chronic, generally the risks are de minimis or very low. It just depends on the area. It depends on the situation. But, you know, we keep the communities, we keep the public informed of -- you know, of these kind of risk estimates routinely. If folks go to our air monitoring, our air program webpage, they can actually have access to the air data.

Because the exposure is typically very low or, you know, non-detect, we're not expecting to see a lot of risk relative to 1,3-D. We look at -- you know, our air monitoring network does not only look at 1,3-D. It looks at, you know, 35 other pesticide active ingredients or degradants. This is just air. So, you know, there could be exposure from water or groundwater, but that's a different conversation.

But for air, you know, we also look at the risk relative to that as well. So if you go to our air monitoring network documents it actually walks through the relative risk, at least for air contaminants.

CHAIRPERSON ANASTASIO: Okay. Great. Thank you, Nan.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Sure.

CHAIRPERSON ANASTASIO: Any other comments from

the public? If so, please raise your hand or type it in the chat.

Yes, Gustavo.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Gustavo. I know Gustavo.

MR. AGUIRRE, JR.: Yeah, how's it going, brother.

How's it going everyone? This is Gustavo Aguirre, Jr. with Central California Environmental Justice Network down here in Kern County. And I am also a member of the Shafter AB 1617 steering committee, along with some of the folks here on the call as well.

But my question goes to Nan. And appreciate it, Nan. Always good to look at this data.

Excuse me. Let me move here. I'm battling with my seven-year old for bandwidth.

But my question is, you know, if the -- at the current level of monitoring, which was significantly decreased from last year, in the contrary, if more monitoring in more locations at a higher frequency was to be deployed as -- would you guys like foresee seeing the same amount of kind of averages in 1,3 readings or a higher frequency, based on what you guys already know and already have collected, deploying more air monitoring like, you know, getting more ground truth? What kind of forecasts do you guys have for that? That's something

I've always been curious about.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Gustavo, I think you're probably referring more to the ambient monitoring locations, right? Not like the -- by the edge of the field, but let's say something that's similar to what's out at the Bonilla Elementary School, if there are more ambient sites -- monitoring sites like that around -- around the community, is that where you're talking about?

MR. AGUIRRE, JR.: Right. Yes.

DPR ASSISTANT DIRECTOR SINGHASEMANON: And also, I think you're also talking about the higher frequency as well, not just location, so two things.

MR. AGUIRRE, JR.: Exactly. Yes. Both -- both of those indications.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah, I think, you know, that's a good question actually. Because we have a long history of monitoring in Shafter, and, you know, we're talking many, many years, so, you know, 52 samples per year, times nine-ish years or so, you know, we have hundreds of samples from Shafter. And, you know, with the graph that I had shown earlier in the presentation -- am I still showing this?

The -- I think it kind of gives us a good idea of what to expect into exposure. You know, I did mention that there's a bit of a blind spot that we're not

necessarily looking at every six -- you know, if you're only looking at one out of seven days, but the -- you know, because we have a larger data set, I think there's some level of confidence. It has -- you know, as we keep collecting data, we could feel more comfortable about how this is -- you know, the more data we collect, the more representative what the graph would be.

So, this is why, you know, you can -- you can maybe model, you can predict, you know, what the concentration would be like in an ambient -- in an ambient station location, but nothing is a substitute for actual monitoring data.

And, you know, if we are able to get more monitoring data, that would help kind of boost the confidence in what we're seeing. But as you know, that's -- it'd -- you know, a lot of it, it costs money. And, you know, to add another station, to add -- to add additional samples to the mix it just costs more money. You know, it's not something that we can -- that will really give us -- gives -- it's kind of -- it's kind of a cost-benefit, I guess that's what we can think about it as.

So I think it's a good question and it's something we could probably visit in a separate forum, maybe as part of the subcommittee that we have with you

guys, because this is something that would involve conversations with the program staff and our scientists there to give us, you know, their take on it.

MR. AGUIRRE, JR.: Yeah. Yeah. And my question maybe was less directed towards like the modeling itself, like, you know, forecasting per modeling, but maybe more towards like, you know, the capturing of one out of seven days a week, like how does that -- my question more or less, like how does that correlate with the frequency of like pesticide permits?

And I know right now there's an issue with like how quickly accessible pesticide permits are, right? And that's something that we're currently running in Shafter to simply make like, you know, a notification, which doesn't seem to be rather difficult. But -- and my question is -- or like my 2.0 question rather is if -- if we were to have access to permits on pesticide use and have that correlated with, you know, more targeted, ambient air monitoring sites, maybe it's just out curiosity, like I wonder how that approach would be different from the current approach and methodology that you guys have?

DPR ASSISTANT DIRECTOR SINGHASEMANON: Yeah. Yeah. It's a pretty deep question, but I think -- I mean a quick take on that would be that, you know, the ambient

side is meant to be sort of representative of community exposure over a long period, right? If you start moving some of the ambient sites, say closer to certain application sites and to try to time it, you know, I'm -- I'm wondering if it we take -- have that kind of conversation and explore that in this -- in another setting. I feel like that's something that we really -- that we can kind of talk about, and think about, and work through. It's going to take a lot of time.

MR. AGUIRRE, JR.: Yeah. Yeah. It was more of a, you know, kind of like let's think about this, right, and then we -- come back to -- I want to place that in the parking lot.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Okay. Right. Thanks, Gustavo.

CHAIRPERSON ANASTASIO: All right. Thank your, Gustavo. Thank you, Nan. In the and interests of time, and I don't see any other public comments, we're going to move to our break. So we're running a little late, so we're going to have a five-minute break. So we will reassemble at 11:14. And then we'll continue. All right. Thank you, everyone.

DPR ASSISTANT DIRECTOR SINGHASEMANON: Thank you.

(Off record: 11:09 a.m.)

(Thereupon a recess was taken.)

(On record: 11:14 a.m.)

CHAIRPERSON ANASTASIO: Thank you, Christal for putting up that slide about the break.

We're going to move on to our next agenda item, which is a report from Mike Kleinman about the AB 617 Consultation Group meetings he's attended recently.

For a little bit of background, AB 617 consultation group includes individuals representing environmental justice organizations, air districts, industry, academia, public health organizations, and local government. And it's meetings provide an opportunity to discuss various aspects of the Community Air Protection Program implementation.

So Mike is going to give us an update now about what transpired at the February 28th, 2020 meeting.

Mike, take it away.

PANEL MEMBER KLEINMAN: Okay. Thank you very much, Cort. So I'm going to share my screen.

(Thereupon an overhead presentation was presented as follows.)

PANEL MEMBER KLEINMAN: And there we go. So --

CHAIRPERSON ANASTASIO: Sorry, Mike. You're in presentation mode. Can you go to display settings.

PANEL MEMBER KLEINMAN: Yeah, let me do that.

CHAIRPERSON ANASTASIO: Great. Thank you.

PANEL MEMBER KLEINMAN: There we go. Okay. Sorry about that.

So I'm Mike Kleinman and I'm with UCI. I'm a member of the SRP and also on the Consultation Group.

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PANEL MEMBER KLEINMAN: I wanted to just give a brief overview of the SRP, the Scientific Review Panel's role in AB 617. And within the language of the act, we have a consultation role with regard to toxic air contaminant monitoring, integrating with existing community air monitoring systems, as these are developed, and providing consultation on approaches to community air monitoring, and plans to reduce the air toxic contaminants and criteria air pollutants. And also, specifically provide consultation on reducing exposures in communities where there are high cumulative exposure burdens.

And basically, these are the criteria that define communities that are of interest to AB 617. And I just want to point out in the agenda, and perhaps Lori can put this in the chat, but there is background information on the SRP roles on the website. So if you want more detail -- I'm going to try to give a very brief discussion of this. But if you want more details, Lori can put those website indicators in there.

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PANEL MEMBER KLEINMAN: So specific topics for the SRP are -- you know, will include -- and this is not an exhaustive obviously discussion of this, but identifying emerging contaminants of concern, specifically priority substances for OEHHA to develop or update health risk values, and contaminants identified by community members from air monitoring data, emissions inventories, and what they know of potential sources of exposure in their communities.

And those will help identify the list of chemical substances that CARB is currently updating. So Appendix A of AB 2588, which is the air toxic hot spots emissions document, contains a very large list of chemical substances to which people are being exposed. And that list is being reviewed and updated and more importantly, we hope to be able to help prioritize compounds that are going to, you know, get additional attention or sooner attention.

This is a work-in-progress. It's still ongoing and we are in the process of reviewing some of the new documentation.

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PANEL MEMBER KLEINMAN: So proposed specific topics that were suggested where the SRP could be helpful would be reviewing plans for assessing potential health

risks and specifically looking at levels at or below current standards. So reference exposure levels, or ambient air quality standards, and looking at exposures that may even be below the levels. We, for example, know national ambient air quality standards for PM2.5 are not as low as they could be and there are still significant health effects that have been identified through epidemiology and other studies that show significant health effects, even in communities where the levels are below the current ambient air quality standards.

Our interests are also to look at potential risks to the sensitive population and relate that back to AB 617 communities, because areas where exposures to various contaminants are high are happening in communities where the populations are also subject to other risk factors. And we've -- you know, some of these are due to economics, some of these are due to nutrition, some of these are due to the fact that the communities have more sources or are impacted by more sources of environmental contaminants.

So we, as a group, SRP, can help with providing some guidance and review of plans to identify the potential for health benefits, for -- from reductions in localized pollution.

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PANEL MEMBER KLEINMAN: So specific areas of

concern are integrating, and analyzing data, and helping provide guidance on how to utilize that data. So we on the SRP have many years of experience and we can help with providing the benefit of that experience and acting as consultants to the communities to help interpret some of that data.

We know that in many of the communities there are, as in Shafter, concerns about pesticide use. And pesticide exposure data are incomplete. And one of the concerns that we've raised at the recent meetings were that pesticide usage is not under the rule of just one agency. A number of agencies help in terms -- are involved in terms of permitting and in terms of monitoring.

And sometimes adequate monitoring at community levels is not complete enough or -- and sometimes not practical. And communities are concerned. And those concerns have been raised at the consultation group that more attention needs to be looked at -- you know, given to, you know, practical levels of monitoring.

With regard to air toxics, often they're not part of the general air quality monitoring programs. These are more specific, yet, there are sources in communities, for example storage areas, that are not always included or not completely included in emission inventories. And SRP

could help provide some context for toxic air contaminants, TACs, and pesticides with respect to potential community risks as these compounds are identified and brought to the attention of the consultation group and to the SRP eventually.

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PANEL MEMBER KLEINMAN: So as part of AB 617, a number of activities are ongoing. There have been some very interesting source apportionment and street level monitoring activities in West Oakland, for example, that drew upon years of accumulated data by the Bay Area Air Quality Management District. And this has been updated and integrated, and a very innovative street level monitoring system was used to develop a much denser map of contaminant levels. And the results of this has been provided to the community. And eventually, these data will improve exposure estimates.

In terms of community air monitoring, using community dispersed small air samplers in addition to the standard air samplers used by the districts and by ARB, small monitors, such as the PurpleAir network being used for monitoring PM levels and also recording air quality indices, and providing a much richer fabric of data for people to be able to get a better idea of what the exposures are.

And there's also, you know, a number of web sources, web available sites, such as AirNow and the PurpleAir network that provides, you know, a lot better view of what's going on in our air and how our communities are being exposed. And those are very useful and in the time of these wildfires has actually been quite scary when you look at how intense exposures to smoke and aerosols from the wildfires has been.

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PANEL MEMBER KLEINMAN: There's been a lot of work being done right now more on procedural efforts. The -- there had been some concern that some community members were not able to get compensated for time. You know, if they need to put in additional time working on community level needs, there was a -- and, you know, a need and also a -- an agreement that CARB will provide some guidance for making stipends available or how stipends would be -- stipend agreements would be reached between the communities and the air districts. Another main issue is that AB 617 operates by creating a blueprint. And this is a consensus type document that provides the idea of what are the best practices, how are different communities coping with ambient exposure.

And the document is a living document. And it was written and the first draft was put out, but there

were gaps in what was in there and the blueprint does need to be updated.

And so a subcommittee has been formed with members -- with balanced representation across the consultation group. The first subcommittee meeting was scheduled and actually happened the end of September. And the -- that document is in the process of being redrafted. And the subcommittee will then bring back recommendations on how to improve a number of aspects that the blueprint covers.

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PANEL MEMBER KLEINMAN: There will be some -- so in the next consultation group meeting, which is coming up, there will be a briefing on proposed changes, also a briefing on the impact of COVID-19 on air quality. There has been some speculation and actually some data that would indicate that as a result of the shut down of various activities and other things, because of COVID-19 and the lockdown, there have been improvements in air quality. And this gives us a really interesting laboratory sort of situation to look at how air quality changes as different parts of our economy start coming back on stream.

And I think the most important thing in what I'm looking at coming up on this next meeting would be a

discussion of the link between community air quality measurement activities and what the State laboratories and the district laboratories are doing and trying to work out ways to integrate some of the citizen science efforts and the community level monitoring, and start to make better sense of how does that relate to our typical air monitoring networks, which are, for want of a better word, designed really to evaluate our compliance with federal and State air quality regulations.

And not necessarily as the perfect tool for understanding the link between exposures and health effects.

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PANEL MEMBER KLEINMAN: So moving forward, the blueprint is being revised and hopefully we'll be building mechanisms that will ensure that the processes and products will reflect the community's needs.

There's a recognition that the blueprint needs to provide mechanisms for creating a shared understanding. And to do this in a way that we don't set one group of partners above the others, it's got to be equitable, that will take into account the links between air pollution and health, and that the ARB and the districts are continuing to shoulder the burden of understanding how to help communities understand the links between air pollution and

held and what can be done to address that.

So the technical elements of the blueprint are as it's going to be redrafted will focus on methods that will help with evaluation of how well existing approaches work, what alternative approaches could be considered, and prioritizing processes that can be completed in a relatively short time to help reduce the burden on community members.

And another concept is that the blueprint should reflect how data systems and platforms at the State and district levels can be scaled up to address all impacted communities eventually, and, you know, get the work completed within a reasonable time frame.

CHAIRPERSON ANASTASIO: Great. Thank you, Mike.

PANEL MEMBER KLEINMAN: Okay.

CHAIRPERSON ANASTASIO: Panel, any comments?

All right. I don't see any.

Any comments from the public?

All right. Joe, you have a comment.

PANEL MEMBER LANDOLPH: Can you hear me?

CHAIRPERSON ANASTASIO: Yes.

PANEL MEMBER LANDOLPH: Yeah. Mike, very nice presentation. Can you tell me how many members does the Consultation Group have, and how were they selected, and what do they represent?

PANEL MEMBER KLEINMAN: The Consultation Group represents participation from CARB, and OEHHA, as well as various -- various other groups and representatives of community associations within the state. And I believe I just saw that a roster has been put onto the chat. So you can get more details on that.

But it's a broadly based group of community leaders in -- on air pollution, as well as scientists from various university affiliations, state affiliations. And each of the districts has representation on the consultation group.

CHAIRPERSON ANASTASIO: Great. Thank you, Mike.

Seeing no other Panel questions, I'm going to move over to public comment. I see Amy Kyle has a comment

Amy, go ahead and unmute yourself.

DR. KYLE: Thank you. Thank you for that really excellent presentation. I think that captured the -- the current state of the consultation group well. I was appointed to the subcommittee that's working on the blueprint. And there are few things I think you all could really help with that I'm not sure are exactly on your list. So I'm going to just take this opportunity to bring those forth.

I've done a lot of work related to the methods for the community assessment and thinking about how those

could work. And a lot of the review up to now has been on the process piece of it, and I'm not going to speak to that. So I think for -- I think what we're missing in a lot of ways in this whole discussion is methods for what we're now calling community scale assessment. And that word is in the briefing you just got. And, you know, I mentioned a little bit before when looking at the pesticides, we have a lot of things that give us kind of a -- maybe a regional scale or a large scale assessment for air quality and those pesticide monitors. You know, they're in seven places and they take a certain number of estimates a year.

And they're not designed really to figure out what are the impacts in the most impacted communities, which is what these 617 communities are. They're more of a reading for their area as a whole.

And I think what we're seeing is that we haven't quite faced that yet in this discussion, in that we're using -- those monitors and that data as if that's going to help us deal with these issues at the community level. And I think we're seeing, well, it doesn't really. I mean, what's happening regionally really doesn't tell you what's happening in Wilmington, or West Oakland, or some place like that. And so we have to start to think about this differently.

And your discussion earlier got into a lot of these points, you know, about, well, how do we do things that are generalizable and that we can do one time and then apply elsewhere? And how much -- what is the amount of assessment that we can do that will actually be informative but not take a hundreds years. You know, those are really some of the issues here.

And I think the Panel could really help a lot in thinking about this question of, well, we already know these are highly impacted communities, so we're not starting from scratch here. What do we really need to move forward to get to reductions? Because the point of this is to get to reductions in an informed way, but also with alacrity. You know, it's not to do it 20 years from now.

And so is there a way that we can reconceptualize some of the things that we do, so that we feel we have a sound foundation for that without spending a billion dollars and taking 20 years. And what we have so far is the communities coming in with their point of view and their perspective and what they see. And I think largely we're finding that truthful, even though it doesn't always have all the data that you might want to have. And so there's something -- you know, some people have called this ana -- analytic deliberative processes, where you

deliberate, you bring in what you know, and then you do analyses as needed to supplement to that.

I think we need to move something a little bit more like that than what we have now in the blueprint, which is basically -- and I think -- I'm going to stop and say I don't -- I don't mean this as a criticism, because the blueprint was put together in a huge hurry, because this thing had to get done in a year. So there wasn't a lot of time to explore a lot of different options.

And so I don't -- I honor the effort that CARB put in to getting it done and getting these projects done. And I -- I'm not criticizing it. I'm saying, well, let's think about now what we've seen from that. It was built a lot around the SIP methods, the State Implementation Plan methods, that we use at a regional scale to identify all the sources of the major criteria pollutants, like PM, and ozone, and the others.

And in the communities, you have a little bit different thing where there are I lot more pollutants of potential concern. You know, it's not just five things with a lot of sources. There are a lot more smaller things that are more differential between these different communities.

And in looking at the plans, I don't really see that the -- a lot of the technical analysis was that

illuminating. I think people knew what they were before and they have the same list after. And in the meanwhile, a lot of analysis was done that the community people couldn't really understand mostly, because it was very complicated.

So the kinds of questions you all are asking when you're looking at this pilot project are the same kind of questions that we need to be asking in resetting these methods and thinking about how we can do this in an effective and informed way, but a reasonable way.

And it is about scale, and what -- where can we -- what can we generalize, and what are the most important things to measure that will be informed elsewhere? And I think there's also a part of it that's a little bit like read across when do we chemicals. It's -- you know, if we found in this community that this is a problem --

CHAIRPERSON ANASTASIO: Sorry, Amy -- Amy, sorry to interrupt, but I --

DR. KYLE: I'm just about done.

CHAIRPERSON ANASTASIO: Can you wrap it up?

DR. KYLE: It's my last -- I am wrapping it up right now.

CHAIRPERSON ANASTASIO: Okay.

DR. KYLE: That the -- we might want to be -- do

something in detail in one community and then read it across to others, so that actually is my last point.

CHAIRPERSON ANASTASIO: Okay. Great. Thank you.

DR. KYLE; So thank you very much for the opportunity.

CHAIRPERSON ANASTASIO: No. I appreciate the comment. And I would like to ask ARB OCAP, Office of Community Air Protection, I think this is an important area in which the SRP could offer guidance, as Paul already showed in his comment to the DPR presentation. So if we could discuss this at a future SRP meeting, I think that would be very helpful.

OCAP ACTING DIVISION CHIEF HUGHES: Okay. Yeah. This is Vernon Hughes. Yeah. Good -- good question, Cort, and good question, Amy.

CHAIRPERSON ANASTASIO: Yeah. Great. Thank you. Okay. In the interest of time --

PANEL MEMBER GLANTZ: Can I -- this is Stan.

CHAIRPERSON ANASTASIO: Yeah, Stan, go ahead.

PANEL MEMBER GLANTZ: So, you know, I think what this all comes down to is what kind of supplemental data collection do you want to be doing in these communities and how do you decide what to measure. And I think that, you know, the experience that Mike alluded to with the wildfires and the AirNow and PurpleAir networks -- and,

you know, it has really engaged the public in a way that I've never seen before. I mean I installed AirNow on my phone. And I'm going to go out in the backyard this afternoon, because it says it's okay. But I think that, you know, the basic problem, which has existed from the beginning, as several people have said is that the monitoring networks are set up regionally and your real -- what you really are asking about what's going on in specific communities.

And so I think the real question is, you know, what are the criteria for collecting additional data in those communities? And, you know, what -- what things should you be measuring? You know, should it be something fairly straightforward like PM2.5 or other chemicals. And then how do you get the data in those communities?

Because otherwise, you're just stuck with trying to extrapolate from the regional data -- and, you know, the problems with doing that is what led to AB 617 in the fist place.

CHAIRPERSON ANASTASIO: Yeah. Thank you, Stan. I think that definitely will be part of our larger discussion how you can get this smaller scale data and how you can use it.

Okay. So thank you, everyone on that item. Thank you Mike for the presentation.

We're going to move on now to the next agenda Item, number 3. I would like just to let everyone know, presenters, public, panel, we're running about 20 minutes late, so if people could be concise, I would very much appreciate it.

We're going to move on now to Agenda Item number 3, an informational update on the Study of Neighborhood Air near Petroleum Sources, SNAPS.

And we're going to start with a CARB presentation. So this CARB study is a program designed to examine air quality in communities near oil and gas extraction and related facilities. And what we're going to do first we'll have the presentation from CARB that will be an overview of the SNAPS Program, including background information and status updates regarding monitoring and planning activities in the communities of Lost Hills and Baldwin Hills.

And Kathleen Kozawa of CARB's Industrial Strategies Division is going to start off the presentation. And Dr. Chris Jakober from CARB's Monitoring and Laboratory Division will also be presenting.

And then after this presentation, we'll have John Faust from OEHHA talk about provisional health values.

All right. So Dr. Kozawa.

(Thereupon an overhead presentation was presented as follows.)

ISD AIR RESOURCES SUPERVISOR I KOZAWA: Hi. Can everybody hear me?

CHAIRPERSON ANASTASIO: Yes.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: Okay. Let's go ahead and share my screen here.

Cort, can you confirm that you're seeing my -- the presentation screen and not the presenter's screen?

CHAIRPERSON ANASTASIO: Yes, it looks good.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: Okay. Great. Thank you so much for the introduction, Cort. It's our pleasure today to present to the SRP on the Study of Neighborhood Air near Petroleum Sources, or SNAPS.

I wanted to start with a couple words about why we're here today talking to you about this. The SRP identified some overlapping aspects of some of the other programs that they're consulting with, such as 617 and 2588. And it was asked of us to kind of provide sort of an overview of SNAPS and sort of how that all fits into the rest of CARB's programs. And so I hope that this overview kind of gives a little bit more context to the SRP on how SNAPS -- on what SNAPS in -- is and how it fits in.

And like you had mentioned, my name is Kathleen

Kozawa. So my colleague Chris and I will be giving this overview, which includes our efforts in Lost Hills and Baldwin Hills.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: And so as the name of the program suggests, it is an air quality study and in neighborhoods that are close to oil and gas extraction facilities. Now, something that I do want to point out is that this is a program that was developed in -- across different CARB divisions and also with our sister agency OEHHA, who you'll be hearing from in the next presentation.

Something that the SNAPS Program does and is important to note is that even though we're monitoring close to these oil and gas facilities, we're actually evaluating the potentia impacts from all sorts of different emissions sources, such as other industrial sources and mobile sources as well.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: The other thing that I want to point out regarding the SNAPS Program is it actually predates 617. And although there are definitely some overlapping features of it and we've certainly coordinated with the 617 group to further our

programs and move them forward, this does precede it just by a little bit.

And so there were several factors that motivated the development of SNAPS. And this includes the continuing concerns that have been raised by communities that live near oil and gas facilities. And we really wanted to get a better idea and understanding of what the air quality in these communities were.

Second was the Aliso Canyon underground natural storage leak that occurred in 2015. And that really highlighted the potential issues with aging oil and gas infrastructure across the state. Also, in 2015, the California Council on Science and Technology released a report that further recommended air quality studies be done near oil and gas facilities as the impacts were not well known or understood.

And finally, SNAPS is part of a broader effort at CARB to understand impacts of oil and gas. And this includes our oil and gas regulation designed to reduce methane emissions and also air sampling during both stimulation or fracking events. And CARB is also funding work to support these efforts and others, specifically mobile monitoring in communities and in and around oil fields.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: So the SNAPS study program goals are three-fold, first, to characterize air quality in communities, and then, as feasible, identify emission sources. Now, this data that is collected is then analyzed for possible health risks, and that's where our colleagues at OEHHA come in.

The SNAPS Program has the ability to monitor for over 200 pollutants, so it's a very intensive monitoring program. Some of the major pollutant categories are listed here in the slide and include toxic air contaminants, criteria pollutants, and volatile organic compounds.

The SNAPS monitoring portion is actually a one-year effort. And so, we cite stationary trailers in communities for the period of one year, which is followed by data analysis and the publication of a final report that's specific to each community.

At this point, I do want to highlight the importance of community engagement and input throughout the whole SNAPS process. So even before we site our trailers, we -- we meet with the community, hold a community meeting to gather input on what they would like to see and what their concerns are. We are also striving to maintain communication with the community throughout the monitoring period. And in the case of Lost Hills, we

did a mid-monitoring report, where we reported some preliminary data to them and Chris will be sharing some of that data in the next upcoming slides.

And then as we draft the final report, we'll be posting that publicly to get community input and public input on that as well.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: So I just wanted to bring in OEHHA here just a little bit and not to steer it -- steer -- steal their thunder. But again, they will be looking at some of the health impacts of the data that we collect and basically comparing data to health-based guidance values to characterize these potential health risks.

And you'll hear a little bit more about health guidance levels in their presentation, so I'll just leave it at that.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: Since this is the first time that SRP is likely hearing about the SNAPS Program, I wanted to go into a little bit of detail about the community selection process. It is a three-tiered approach that we took. And again, you might see some overlap with 617. Again, although SNAPS predates the 617 program, we did coordinate with them and actually

are -- the announcement of the SNAPS communities and the first 617 communities were done in coordination with each other.

But back to the community selection process. The first stage is the identification stage, which resulted in a candidate -- a list of 56 candidate communities. These communities were divided into two regions in California, the Northern California region, which includes the Central Valley, and the Southern California region, which includes the Central Coast.

The identification stage was really just kind of a collection of all the communities that could be near oil and gas or are oil and gas. And this was done with a basic mapping analysis. And also suggestions were collected by the public and the air districts.

These 56 candidate communities then went to the evaluation stage, where we further evaluated communities based on specific characteristics that might make some communities more likely to be impacted by oil and gas compared to others. And so these were kind of yes/no questions for us.

So, for example, in terms of local characteristics, were communities downwind -- downwind of wells -- excuse me -- yes or no, were communities near areas of high well density, yes or no, and so forth. So

this evaluation of the communities narrowed the list to a short list of four to six communities per region that were further evaluated in the prioritization stage, which is Stage 3.

So prioritization involved really a deeper dive into the data. As we've been -- as we've described it. So in the case of high well density in our local characteristics, we actually looked at what the well density was. Was it 10 wells per square mile or was it a hundred miles per -- wells per square mile, for example? And so based on this deep dive, we came up with four communities for monitoring.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: And these are the first round communities that were selected for SNAPS. So first is Lost Hills. And I should say Lost Hills, and McKittrick, Derby Acres were the two communities selected in the Northern California/Central Valley region. And then the two communities selected in the Southern California region were Baldwin Hills and South Los Angeles.

And so the first community to receive monitoring was Lost Hills. And Chris will be going over that in a minute. And the second community was Baldwin Hills and I'll be talking about that a little bit later in the

presentation.

So at this point, I'm going to go ahead and transition the presentation to Chris, who will talk a little bit more about our efforts in Lost Hills.

Chris.

MLD AIR POLLUTION SPECIALIST JAKOBER: Thanks, Kathleen. And thank you to the SRP members for giving us the opportunity to give you an overview of the program.

Next slide, please.

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MLD AIR POLLUTION SPECIALIST JAKOBER: So briefly an overview of the timeline for the SNAPS monitoring that's been completed in Lost Hills. The official start date was in May of 2019 with over 200 compounds being measured since June of that year. Throughout the process, we've conducted third-party audits throughout the monitoring campaign for validation and verification of data collection.

Additionally, mobile monitoring efforts were completed at six separate times throughout the community. We'll discuss some of those results from both the stationary and the mobile monitoring later on in this presentation, as well as some examples of the types of analyses that can be completed with this data.

Unfortunately, due to stay-at-home orders going

into effect in March of this year, CARB had to adjust operations in Lost Hills to ensure safety of both staff as well as Lost Hills residents, and the monitoring was drawn to a conclusion in April 29th.

CARB is currently analyzing the data and working on a draft final report for -- to be released for public comment. And we anticipate the release of that material in 2021.

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MLD AIR POLLUTION SPECIALIST JAKOBER: So some of the instruments measured pollutants at the Lost Hills SNAPS trailer. Some are faster than laboratory methods and report data preliminarily every second or every hour. And while these methods measure a smaller number compounds than laboratory methods, the on-site measurements can report data much more quickly. Measurements on-site included both gases as well as particulate species.

Next slide, please.

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MLD AIR POLLUTION SPECIALIST JAKOBER: We also had a public facing website, where the real-time data for six pollutants were uploaded within a few hours of collection and provided information on the current Air Quality Index, or AQI, for Lost Hills and provided that in context to other regional monitoring stations.

The key pollutant levels were shown relative to the health standards. And also the previous week of measurements were shown as a histogram at the bottom of the page. If any of the pollutants would have exceeded the health standard, the box labeled with the pollutant of concern would have changed to a highlight of red rather than green. And while we did not expect concentrations of pollutants on the data displayed to be of concern, if levels were seen areas of concern, we would have contacted proper authorities and operators and the community would have been notified as well.

Next slide, please.

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MLD AIR POLLUTION SPECIALIST JAKOBER: So preliminary data at Lost Hills for PM2.5, ozone, carbon monoxide and hydrogen sulfide were compared against both short-term air quality standards as well as health protection guidelines. Shown for each pollutant are the average concentration, the maximum concentration, and the standard or guideline level.

All of the preliminary data collected at Lost Hills for these pollutants were below health protection levels. This is true for both the average as well as the maximum concentrations that were observed.

For instance, average concentrations of hydrogen

sulfide were over a hundred times less than the acute REL.

Next slide, please.

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MLD AIR POLLUTION SPECIALIST JAKOBER: Comparing the preliminary PM2.5, ozone, carbon monoxide and hydrogen sulfide hourly concentrations measured for the first four months of the study from June through essentially August of 2019 to the other pollutants from Lost Hills that were measured on-site reveals some interesting things.

This figure is showing you the relatively hour abundance for pollutants over the course of the day. On this graphic, we are showing what the average looks like based on our measurements to date. Yellow blocks are levels higher than the average hourly concentrations. Blocks shown in blue are periods where the pollutants are below the average hourly concentrations.

Along the horizontal axis, we show the hour of the day when the measurements were collected. And the vertical axis are the pollutants from top to bottom. Non-methane hydrocarbons plus BTEX, methane, hydrogen sulfide, black carbon, carbon monoxide, ozone, and PM2.5.

Several interesting observations can be shown in this data comparison including the following. We see elevated levels of hydrocarbons including methane typically in the early morning hours before sunrise.

Additionally, we see black carbon and carbon monoxide at elevated levels, both in the early morning hours and in the early evening with a possible contribution from motor vehicle combustion.

And lastly, the highest levels of PM2.5 are typically in the late afternoon or early evening. And these levels are often associated with elevated wind speeds.

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MLD AIR POLLUTION SPECIALIST JAKOBER: If we now transition to some of the discrete analyses, and preliminary results for such approaches are shown here. We collected air samples and pressurized them within a stainless steel canister. The canister is taken back to the laboratory for direct analysis of the gases sampled. We measured 135 different compounds each week. Most were measured over a 24-hour sampling period. However, many could also be measured hourly as well.

Initially, we have seen ten organic species detected above our laboratory analyses limits, but none have been detected at any acute health thresholds.

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MLD AIR POLLUTION SPECIALIST JAKOBER: There we go. These are the species that have been observed to date. Many at or below regional or global background

levels.

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MLD AIR POLLUTION SPECIALIST JAKOBER:

Additionally, airborne particulate was sampled onto teflon filters. Teflon filters were then taken back to a laboratory for XRF analysis. This analysis looked for 28 different particle-bound metals weekly at the Lost Hills site. Twenty-four of those metals were detected in the preliminary data. Shown here on the vertical access of the graph are concentrations in units of micrograms per cubic meter. The horizontal access are the different elemental species. On the right-hand side, we show a figure contrasting the data for when the wind speeds were less than file miles per hour with those where the wind speeds were greater than ten miles per hour. Days with higher wind speeds showed greater ele -- concentrations of silicon, alluminum, calcium and iron. These elements are typical for crust material, suggesting a possible origin as wind-blown soil and/or dust for these elevated levels.

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MLD AIR POLLUTION SPECIALIST JAKOBER: Shifting gears, we'll look at and discuss some of the mobile monitoring efforts for the data that was collected in Lost Hills. Mobile monitoring is a technique where measurements are taken along surface streets as we are

driving in order to construct a snapshot of pollutant concentrations in an area.

We use an auxiliary battery to power the instruments. And this limits the amount of time that we can actually use this technology in the field. We use all the available information to determine the best times to conduct the mobile monitoring. For example, we can use information like that from the previous slides to determine when we expect to see higher concentrations of hydrocarbons or methane. We also try to target our periods of monitoring for when the community has reported odors.

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MLD AIR POLLUTION SPECIALIST JAKOBER: For our Lost Hills measurements, the platform was equipped with instrumentation to measure methane, ethane, BTEX compounds and hydrogen sulfide. Measurement of methane, ethane and hydrogen sulfide occur once per second and BTEX is profiled every 15 minutes.

CARB staff have completed multiple trips with nearly every street in Lost Hills driven and measured multiple times. Additional measurements were gathered in areas surrounding Lost Hills, including collection of data both upwind and downwind of Lost Hills and the oil field.

Similar methods for mobile monitoring will be

used in the communities that surround the Inglewood Oil Field. For -- and some of the initial data collected to date will be shown on the next slide, but it's important to remember that mobile monitoring is a snapshot in time, and that a single measurement is not necessarily representative of long-term trends or persistent pollutant concentrations.

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MLD AIR POLLUTION SPECIALIST JAKOBER: I'll being with an overview of a single measurement run for the morning of October 1st during the time period of 6:25 to 7:38 in the a.m. This map shows Lost Hills in the center, the oil field on the left to the west of the town and the I-5 and Highway 46 intersection on the right to the east of town.

Methane concentrations are shown on this map with the scale shown on the right-hand side. Each color dot represents a single measurement and the color corresponds to the concentration for that measurement.

On the left-hand side is a wind rose indicating the wind speed and direction during the periods of measurement. Wind was primarily from the south, southwest in direction and of low wind speed. Typically, less than two miles per power.

For this particular trip, the data collection

began in the Lost Hills school parking lot, then traveling west on Highway 46 through the oil field, turning around to drive back east into Lost Hills. Methane concentrations were typically in the range of 2.0 to 2.2 parts per million as we traversed through the field. However, later measurements captured some elevated levels within the southwest corner of Lost Hills.

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MLD AIR POLLUTION SPECIALIST JAKOBER: So looking closer at the data in Lost Hills. Elevated methane concentrations are centered around Inyo, King streets and Martin Avenue relative to the area on the eastside of Lost Hills which was measured approximately 15 minutes later.

These measurements suggest a methane plume traveling through the area during the 5 to 10 minutes the mobile platform was in that area collecting data.

Concentrations observed by the mobile platform agree with the measurements collected by the staff's stationary monitoring trailer, which is located at the Department of Water Resources' facility for the date and time that this data was collected.

With that, I'll now transition back to my colleague Kathleen Kozawa for discussion of SNAPS future efforts plan for the Inglewood Oil Field.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA:

Thanks, Chris. So I'm gong to close the presentation here with a few slides on our current efforts in the Baldwin Hills area. Again, this is in Southern California near the Inglewood Oil Field. So Baldwin Hills is actually one of several communities that surround the Inglewood Oil Field. And it's located about halfway between downtown L.A. and the coast. Inglewood Oil Field is a large urban oil field that's characterized by complex terrain and actually has several major thoroughfares that run through it.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA:

Engagement with the Baldwin Hills community started about a year and a half ago starting with communities input -- holding community meetings to gather input on potential monitoring sites.

And the community had a lot to say with regards to monitoring sites. And we came away from this meeting with a list of 20 total sites to look into. And so what we ended up doing was doing some groundwork to verify that the sites met technical and logistical requirements, which include things like considerations for staff safety, power, space, site access and, of course, relative location to the oil feeds.

Once we -- once we were able to look at these different things, we presented a short list of four sites to the community, and this was just back in February.

After presenting our sites, we did hear from members of the community -- of the Baldwin Hills community. They wanted a little more information about our reasoning and justification for our four sites. So we created a detailed document that basically detailed our thinking and our site selection process. And we opened this document for a 30-day comment period in May.

And so at this point, we are finalizing the two -- finalizing two sites. And let me kind of go back a little bit. Because of the input that we received from the community and based on the complex terrain of the area, we did decide to build a second trailer to help in the monitoring efforts in the Baldwin Hills area.

And so once we have established agreements with these two sites, we'll begin air monitoring and host a kick-off meeting. And we plan to do that in early 2021. Again, as Chris alluded to, for Lost Hills, COVID has definitely set back a little bit of our timeline for the Baldwin Hills area, but we are aiming to be there early next year.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: Just a

little bit closer look at the site selection. And you can see a map here of the area, the Inglewood Oil Fields is just kind of in the center here. And I don't know if you can see my cursor, but the oil field is quite large. And so the four sites span across the oil field, two on the westside and two on the eastside. And you can also see where the prevailing wind directions come from.

One other aspect of the site selection that we did also take into consideration was the existence of odor complaints. And that's what you see here in the dotted circles. These are areas where community residents have reported odor complaints. And these certainly informed where our sites in -- in and around the Inglewood Oil Field would be, but also the odor complaints will certainly inform our mobile monitoring routes. And again, we'll be finalizing the two sites shortly hopefully sometime soon.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: And just to close up, a lot of these next steps we've already sort of mentioned, but I did want to add, like in Lost Hills, we will be streaming real-time data on a small subset of pollutants on the SNAPS website that the public can go and view.

We do plan to get connected with the community

during this process and would like to -- and strive to work with all interested stakeholders and residents as much as possible.

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ISD AIR RESOURCES SUPERVISOR I KOZAWA: And I guess -- I guess this is my concluding slide, just some resources, which include our website, our email -- program email snaps@arb.ca.gov and some contact information, Carolyn Lozo, who is the Chief of the Branch. She's overseeing this -- this program

So with that, I'll -- I'd be happy to answer any questions and Chris.

CHAIRPERSON ANASTASIO: Great. Thank you very much, Kathleen. Thank you very much, Chris.

I'm going to open it up first to the Panel. I see Ahmad has a question. Ahmad, go ahead.

PANEL MEMBER BESARATINIA: Hi. The question is for Kathleen. For the first part of the presentation, I understood that there were questions and questionnaires that are used to -- for identification and prioritization of communities.

And second question to ask. My question to you is we know that air pollution is related, if not causally, at least there are a wide variety of diseases attributable to air pollution such as respiratory disease, asthma,

cardiovascular disease, COPD and cancer, was the incidence of this disease used as an indicator, for example, data from county registry, was used in order to help prioritize communities that are at least historically affected by these diseases as a result of pollution?

ISD AIR RESOURCES SUPERVISOR I KOZAWA:

That's a -- that's a great question, Ahmad, and thank you for asking it. I -- I know -- I know the issue of looking at these different health metrics had come up. But in the selection process, we actually did not look at specific health metrics, like incidences of asthma or anything like that to prioritize communities.

Our focus was really were these communities near oil and gas and did they have the potential to be impacted by such sources?

CHAIRPERSON ANASTASIO: All right. Thank you.

Other questions from the Panel? Just to let everyone know, we're going to do the Panel's questions first and then I'll call on the public or agency staff, if they have any questions. But we're going to start with Panel discussion.

So I have a question, but I think John is going to get to this, but I just want to make sure it gets covered. So a lot of VOCs were monitored and I imagine many of them do not have reference concentrations or

health guidance values. So that's the effort of OEHHA to do these preliminary values.

MLD AIR POLLUTION SPECIALIST JAKOBER: (Nods head.)

CHAIRPERSON ANASTASIO: Okay. I see Chris nodding his head.

MLD AIR POLLUTION SPECIALIST JAKOBER: Yeah. Yeah, that's correct. And I think John will give you some more context as far as their methodology and follow-up material.

CHAIRPERSON ANASTASIO: Okay. That's great. Thank you.

Mike, I see you have a questions. Go ahead.

PANEL MEMBER KLEINMAN: Yeah, I was just curious as to whether there are nearby air monitoring network sites, so that you can look at how your community level monitoring compares with the regional monitoring?

MLD AIR POLLUTION SPECIALIST JAKOBER: We do on the real-time website compare to the regional scale locations for the pollutants that are available. Unfortunately, we don't always have the granularity from a regional site that would be directly comparable to the measurement intensity of the SNAPS data collection. So where it's available, we certainly do try.

CHAIRPERSON ANASTASIO: Thank you, Mike. Thank

you Chris.

Beate, your question.

PANEL MEMBER RITZ: Yeah. You mentioned that you're not using any of the health outcomes to site the locations, but I thought I heard that you're interested in health effect evaluation eventually. Would you mind telling us what kind of databases you will be looking at in order to do that, or is there any kind of surveying of communities, or what's going on?

ISD AIR RESOURCES SUPERVISOR I KOZAWA: I think OEHHA might be better -- in a better position to answer that question. And I don't know if John wants to chime in at this point.

DR. FAUST: I mean, I can say a little bit. I mean, the -- the analysis that OEHHA is doing is based upon the air monitoring data and will be of the health risk assessment that is based upon, you know, the measured concentrations of air over, you know, the various durations.

So the study itself does not include a -- you know, a health survey or a -- or a component that looks at actual community health -- yeah, and is strictly based upon the monitoring.

ISD OIL AND GAS AND GHG MITIGATION BRANCH CHIEF LOZO: I'd like to just add to that.

PANEL MEMBER RITZ: So it's -- it's risk Assessment. It's not research?

DR. FAUST: (Nods head.)

ISD OIL AND GAS AND GHG MITIGATION BRANCH CHIEF LOZO: Oh, I just -- this is Carolyn Lozo from CARB. I just wanted to add to that, that this is outside the SNAPS Program. But the L.A. County Department of Public Health is in the process of putting together for the -- for the Inglewood Oil Field, Baldwin Hills area something like what you're talking about, a community health survey. And we are hoping to coordinate with them to the point where that will be happening at about the same time as we are monitoring in that area. So we're working with them at the point and hope that that will materialize.

PANEL MEMBER RITZ: Great. Thank you.

CHAIRPERSON ANASTASIO: Any other comments or questions from the Panel?

All right. Seeing none. I open it to public comment. Again, you can either raise your hand and I'll call on you or you can put your comment into the chat and I'll read it out and have someone respond to it. I see a comment from David.

David, go ahead.

MR. VIVEROS: Hi. Thanks. My question is around the data collection process. I'm just curious about the

existing challenges. And, you know, you made measurements for over a year down in the Lost Hills area. What did you learn from it? What are the needs still around the data that you would like to collect?

MLD AIR POLLUTION SPECIALIST JAKOBER: Well, I think, you know, we continue to refine the approaches, trying to increase detection limits, increase the number of species that we're able to capture as part of our data acquisition. One of the challenges is always the availability of resources. You know, mobile measurement is incredibly staff intensive. And so that limits the amount of that type of complementary information that we can get that increases our spatial and temporal awareness of how these pollutants are distributed across the community.

So I would say that that's probably been the biggest learning process, as well as, you know, continuing to refine quality assurance/quality control aspects to generate as high quality data as possible to hand off for OEHHA's risk assessment.

MR. VIVEROS: Okay. Cool. Thanks.

MLD AIR RESOURCES SUPERVISOR I HAM: This is Walter from Monitoring and Lab Division as well. I would also just to add on a little bit. How we communicate data is also something that we learned in the process.

So you know, when we -- when we first contacted the community one of the things that they first said is you need to provide context for what this -- what these measurements mean. Does this mean that it's health -- you know, what does it mean to our health. And so we -- through a community engagement process, we developed a custom website that was catered to the comments that we had heard from the specific community. And obviously every community is different.

So as we work with Baldwin Hills in future communities, we'll also go through the same process. So the data portal or data display could be different based on what the needs are of that individual community. So I would say that's definitely something that we picked up during this process as well.

MR. VIVEROS: Yeah, and it seems like you might be able to continue that with the future communities you monitor and maybe make it kind of like a standard. It seemed really cool. It would be interesting to see what kind of -- you know, to have that data in a lot more communities.

CHAIRPERSON ANASTASIO: All right. Thank you, David for your question, and Walter and Chris for your responses.

Beate, did you have a follow-up question?

PANEL MEMBER RITZ: Yeah, actually, I do. This is really a big effort with, you know, 120 or 200 substances measured. It will not be easily repeatable or too expensive. Since one of the purposes is to evaluate the influence of what comes out of oil fields on communities. Is there a chance to actually generate some kind of tracer -- tracer compound or chemical that could be measured much more widely, much more cheaply and then actually applied to modeling efforts? Is that part of this, and if not, why not?

MLD AIR POLLUTION SPECIALIST JAKOBER: That wasn't part of the original scope. As folks who've tried to identify unique tracers for chemical mass balancing modeling work, it's an incredibly intensive process that does not always yield very high results. The other thing that you're challenged with as it relates to oil and gas is the chemical composition of the field changes from one region to the next.

You know, the Lost Hills field, for instance, is a sour field with higher sulfur content. Whereas, the Inglewood Oil Field is a sweet field with much less sulfur content. So that is an added complexity here. The scope of this was primarily to provide as much intensive speciation to drive as informed health risk assessment as possible for these communities that are in close proximity

to the this type of activity.

CHAIRPERSON ANASTASIO: Great. Thank you, Chris and Beate.

I believe we have a question on the Spanish channel. So Claudia our Marci, can you ask that question?

Okay. Any other comments? And Claudia and Marci if you get on the meantime please go ahead.

THE INTERPRETER: There is comment in Spanish.

CHAIRPERSON ANASTASIO: Okay. It's currently being translated.

While we wait for that, are there any other public comments?

All right. We'll just wait a minute then while Claudia translates the comment from Spanish.

MS. LOVE-LAZARD: If it's easier, Claudia or Marci, we could also -- or Lori, since you have it, we could also put it in the chat. I think it came in in Spanish, but it would just need to be translated.

CHAIRPERSON ANASTASIO: Yeah, you could also speak it. We could have it orally.

THE INTERPRETER: I'm sorry. I'm not -- this is Marci. And I'm not finding it. Claudia, if she's seeing it, that's great, but where is it?

CHAIRPERSON ANASTASIO: Okay. I see a comment from --

MS. LOVE-LAZARD: Lori texted it over to you. Let me drop -- let me see if I can drop it or, Lori, can you drop it in the chat. It came in via email.

Perfect. Thanks, Lori.

CHAIRPERSON ANASTASIO: Okay. So I see the Spanish version. And I guess Claudia is working on it. In the meantime, I'm going to go to Gustavo who I see has a question.

THE INTERPRETER: Okay.

CHAIRPERSON ANASTASIO: Gustavo, go ahead.

Gustavo, I can't hear you. I don't know if you're muted or if it was an incorrect hand raise.

MR. AGUIRRE, JR.: Yeah, I got a question, but I'm not sure if you wanted to address the Spanish one first.

CHAIRPERSON ANASTASIO: Okay. I see --

THE INTERPRETER: I'm ready to --

CHAIRPERSON ANASTASIO: Yeah, go ahead and address the translated question first.

It says, "Good, afternoon. My name is Veronica Martinez Ledesma. I'm a Salton City resident, which is part of the Imperial County California. How could the Salton City community participate in AB 617? This is one of the forgotten rural communities and highly polluted areas in the Imperial County. Thank you".

Can Kathleen, I don't know, perhaps you could talk about it. It sounds like the question is about how does a community become either part of SNAPS or maybe part of the AB 617 communities.

ISD AIR RESOURCES SUPERVISOR I KOZAWA:

Thanks. Thanks for repeating the question, because I couldn't quite hear when you were asking it.

I can't speak to the 617 communities, but for SNAPS, we're always open. So if the commenter wants to contact us or even through this comment here, we can certainly look into the Salton Sea community and add that onto our list. So the SNAPS Program is a continuing program. We're -- even though we're starting with four communities, we plan to add more as time goes on.

Now, I guess I'll caveat that by saying that the process -- it's not a fast process, so it's a multi-year process for communities, so it might take a little while. But certainly we're open to any other communities that want to participate or are looking to see if they can in the SNAPS Program. We're completely open to that.

CHAIRPERSON ANASTASIO: Great.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: As long as I can get the commenter's name, maybe we can follow up. We can certainly follow up.

CHAIRPERSON ANASTASIO: Yeah. Kathleen, in the

chat, Veronica has put her name and phone number.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: Okay.

CHAIRPERSON ANASTASIO: And could you just repeat your SNAPS email for her in case she wants to contact you directly via email.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: Sure. And I'll put it in the chat too, but it's just SNAPS - S-N-A-P-S - @arb.ca.gov. And I'll go ahead and put that in the chat when I can figure that out.

CHAIRPERSON ANASTASIO: That's great. Thank you.

Are all the other ARB programs jealous of your acronym, by the way?

(Laughter.)

CHAIRPERSON ANASTASIO: You've got a leg up on PTSD. All right. Thank you very much.

Gustavo, did you have a question?

MR. AGUIRRE, JR.: Yes. Thank you so much. Gustavo at CCEJN.

And my question is really just on the timeline. And so from my understanding, currently, Baldwin Hills is a community where SNAPS is ongoing. And I know there was four communities, two in the Central Valley and two in the L.A. basin. On the timeline, when can we foresee the other central -- second Central Valley community come online.

ISD AIR RESOURCES SUPERVISOR I KOZAWA:

That's a -- that's a good question, Gustavo. So Baldwin Hills, if we start monitoring in early 2021, then that means early 2022 would be one year of monitoring in Baldwin Hills. So shortly after that, we would start mobilization -- well, we would start reaching out to the second Central Valley community of McKittrick and Derby Acres. So I would say optimistically 2022, but I -- but don't quote me on that.

MR. AGUIRRE, JR.: Okay. And in Baldwin Hills still, you guys are at the development phase or like the start -- the start phase. There hasn't been any actual monitoring that has occurred.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: No. We haven't started monitoring yet.

MR. AGUIRRE, JR.: Thank you.

CHAIRPERSON ANASTASIO: All right. Thank you Gustavo for your question. I think that's it. I see no other comments, so I'd like to thank Kathleen and Chris again. It was a very interesting presentation and it's a really interesting program that I look forward to seeing your next round of data from.

ISD AIR RESOURCES SUPERVISOR I KOZAWA: Thank you.

CHAIRPERSON ANASTASIO: I am happy to say we are

almost back on time. So thanks for everyone for that.

So we have earned a full 10-minute break right now. So it is 12:30 by my clock, so we will reassemble at 12:40. And John Faust from OEHHA will talk to us about provisional health guidance values.

(Off record: 12:30 p.m.)

(Thereupon a recess was taken.)

(On record: 12:40 p.m.)

CHAIRPERSON ANASTASIO: Okay. Welcome back, everyone. Let me just do a quick glance at Panel members. Well, most of them have their camera off. All right. Panel members, we are ready, so if you're back, please turn on your camera so I can see you're in attendance and then we'll continue.

Beate, Stan, Mike.

PANEL MEMBER RITZ: I'm here.

CHAIRPERSON ANASTASIO: Thank you, Beate.

Mike, Stan?

PANEL MEMBER BLANC: Cort.

CHAIRPERSON ANASTASIO: Yes.

PANEL MEMBER BLANC: I just want to say that I guess I could cross-compare with the -- the agenda, but I have not found the amount of breaks that we're taking to be sufficient and appropriate.

CHAIRPERSON ANASTASIO: Okay. Yeah, we had

scheduled a 10-minute break every 90 minutes roughly. I cut short the first break. I cut it to five minutes. If that had been a full ten minutes, would that have worked for you?

PANEL MEMBER BLANC: I -- I don't know, because we're over three hour -- we've over the three-hour mark and we've had very little break. And I -- I guess the plan is to go well past the lunch hour as well.

CHAIRPERSON ANASTASIO: Yes.

PANE MEMBER BLANC: So I think that, in general, I think this agenda could be tweaked.

CHAIRPERSON ANASTASIO: Sure. I mean, it's always a balance between taking a break for lunch and trying to get the meeting over more quickly. But if people --

PANEL MEMBER BLANC: Yeah, I know. Well, maybe the compromise would be a 20-minute break or something at some point, but I --

CHAIRPERSON ANASTASIO: Sure, yeah, I'm happy to do that for the next meeting.

PANEL MEMBER BLANC: And I'm only one person, but I just want it to be -- you know, maybe other people should chime in on that.

CHAIRPERSON ANASTASIO: Yeah. No, I'm definitely open for input. We'll just

PANEL MEMBER BLANC: Especially, you know, in -- you know Zoom fatigue is a real phenomenon.

PANEL MEMBER GLANTZ: Yeah, three hours is a long time to sit here staring at the computer without a break.

CHAIRPERSON ANASTASIO: Okay.

PANEL MEMBER BLANC: Without a substantive break, let's just say.

PANEL MEMBER GLANTZ: Yeah.

CHAIRPERSON ANASTASIO: Yeah. I timed it just to give you enough time to run to the bathroom and back.

PANEL MEMBER GLANTZ: Well, it worked.

(Laughter.)

CHAIRPERSON ANASTASIO: So at least you don't have that problem.

All right. So thank you, Paul. I'll take -- we'll build that into the next meeting.

Let's see, I see Ahmad. Stan is on. Joe is there. All right. I think at least we have quorum and I believe everybody is back from the panel. So our last --

PANEL MEMBER BESARATINIA: I'm stretching.

CHAIRPERSON ANASTASIO: Okay. Ahmad is stretching.

PANEL MEMBER BESARATINIA: I can hear you.

CHAIRPERSON ANASTASIO: Sounds good. Thank you, Ahmad.

PANEL MEMBER HAMMOND: And Kathie is here too.

CHAIRPERSON ANASTASIO: Thank you, Kathie.

Okay. So I think we're set to go.

The last part of today's meeting, agenda item number 3, is a follow of Kathleen as Chris's presentation. And then it's going to be a presentation from OEHHA. As Chris mentioned, many of the air toxics being monitored in the SNAPS Program don't have OEHHA-approved cancer potencies or non-cancer reference exposure levels. And in order to consider the emissions from chemicals that haven't been assigned these approved health values, the staff are proposing to assign provisional values.

And so staff from OEHHA gave us an overview of the proposed methods for assigning health guidance values for chemicals at our last meeting in July. And Dr. John Faust from OEHHA is going to -- and his staff will provide additional information in the next presentation.

So John, the floor is yours.

(Thereupon an overhead presentation was presented as follows.)

DR. FAUST: All right. Thank you. Let me pull up my slides. All right. So you can see the slides, correct?

CHAIRPERSON ANASTASIO: Yes, that's correct, John.

DR. FAUST: All right. Thank you.

Yeah. So good morning. I'm John Faust, Chief of the Community and Environmental Epidemiology Branch, which we have two OEHHA toxicologists, Drs. Heather Bolstad and Rachel Hirani.

So our focus today, as you've mentioned, is on work that we're doing to support the SNAPS program. And thank you, Kathleen and Chris, for that very nice presentation with the overview of the program.

So as described, OEHHA's role in that program is to prepare the human health risk assessment for each SNAPS community, based upon the air monitoring data collected by CARB.

So the assessments will provide information to community members on potential health risks from exposures to air pollution, particularly those that may be associated with the nearby oil and gas production.

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DR. FAUST: So at the July 9th SRP meeting, I made a presentation on unassessed chemicals --

PANEL MEMBER GLANTZ: Can you put that into presentation mode, so we can see the slides better.

DR. FAUST: Oh, I'm sorry. Sure. Let me see how I can do that.

MS. LOVE-LAZARD: So, John, just click slide

show.

DR. FAUST: Slide show. Here.

MS. LOVE-LAZARD: Yeah. And you can start from where you were with present -- like current slide or toggle. Is that in presentation mode yet?

MS. LOVE-LAZARD: If you play say from current slide, it will go on the slide you're on and it should make it bigger.

DR. FAUST: I have it bigger on a second screen, but not on this -- the main screen.

DR. BOLSTAD: You might have to adjust the monitor, John.

DR. FAUST: Oh, where is that? Is that in the that --

DR. BOLSTAD: Top right within the slide show. Click presenter view maybe. To the right.

DR. FAUST: To the right of here?

DR. BOLSTAD: Sorry, back -- in your current ribbon use presenter view of the box, under monitors.

DR. FAUST: I don't see that box.

DR. BOLSTAD: Just below the --

PANEL MEMBER GLANTZ: On, never mind. Let's just move on. I mean, this -- we need to get moving here.

DR. FAUST: Is that not -- we can minimize -- make it small. Does that help?

CHAIRPERSON ANASTASIO: Yes, that's better.

DR. FAUST: Okay. Well, I'm sorry. Yeah, I'm not sure where I can change this.

Yeah. So at the July 9th meeting, I made a presentation on the unassessed chemicals and potential ways to address them. And in this presentation, we'll give some brief background on health guidance values or HGVs, a summary of the problem we're trying to address here, and outline potential methods to approach it.

These methods include adopting or adapting existing work from other programs and entities, as well as another approach which we'll talk about shortly. We welcome any comments the Panel may have. We've included some questions at the end of the presentation that might help guide the discussion or comments by the Panel.

So to be clear, this work is aimed at identifying new HGVs that we can use provisionally rather than formally adopt for the specific purpose of screening for potential health risks for chemicals that are measured in community air. These may change at a later time as newer or better information is available.

The results may also inform more in-depth work we do on specific chemicals in the future, as well as other efforts like the effort CARB has undertaken with respect to the new chemicals in the AB 2588 inventory.

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DR. FAUST: So as a -- as a quick reminder, we're using the term HGV to mean the amount of a chemical, like a concentration in air, which is likely to pose little or no appreciable risk to human health. These are determined for both cancer and noncancer endpoints.

Noncancer health guidance values are determined for a specific duration of exposure, typically chronic, subchronic, or acute exposure. For example, the OEHHA chronic reference exposure level, or chronic REL, represents the level of exposure in which no adverse health effects are expected to occur, if exposed continuously over a lifetime.

And acute REL represents an air concentration without appreciable health risks if exposed for one hour. Non-cancer health guidance values are typically derived using a point of departure, or POD, with -- which is an exposure level in an animal or human study, at which no adverse effects or limited adverse effects are observed. Uncertainty factors are applied to the POD to account for potential differences between the critical study from which the POD was identified and the target human population.

These include factors, for example, to account for potential differences between the animal and human

toxicokinetics, and -- or factor to account for interindividual variation in the human population.

Noncancer health guidance values can be compared to the chemical's exposure levels. And this relationship is expressed as a hazard quotient. For carcinogens, the HGVs represent the excess cancer risk of -- or risk of developing cancer at a specific air concentration. And the increased risk of cancer at a specified exposure level can be calculated using the potency value.

The risk of developing cancer for chemical can be summed to give a cumulative lifetime cancer risk.

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DR. FAUST: So at the last SRP meeting, I mentioned some of the places we would encounter unassessed chemicals. Here, the nature of the problem is that only a fraction of the chemicals being measured in this next program have OEHHA health guidance values. For example, there are about 200 chemicals monitored in the SNAPS Program. And of these, only about 30 percent have an OEHHA chronic HGV, and about 12 percent have an acute HGV.

Of the approximately 46 of the 200 chemicals that have been identified as carcinogens, OEHHA has cancer potency -- potency factors for 41 of them, so a higher fraction there.

Having more values, would allow us to more fully

understand the potential health risks to address them. So derivation of an OEHHA REL or other HGV is not possible for all monitored chemicals, due -- primarily due to limited time and resources. Although, in some cases, there may also be a lack of relevant information.

So a possible solution is a mechanism to provide information in a more expedited manner on potential health risks. The tradeoff, of course, is that provisional values may carry a greater uncertainty than HGVs derived through traditional procedures. And it's also possible that for some chemicals, the level of uncertainty in developing or adopting a provisional value will be too high to be acceptable.

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DR. FAUST: So in the July 9th meeting, we discussed two broad ways of establishing provision HGVs for chemicals without OEHHA values. The first is to use values from other entities when they exist. Here, we would either adopt these values as they are or adapt them with some modification. For example, a value from the U.S. EPA's IRIS Program may be adopted and used while an occupational exposure limit may be adapted with the application of uncertainty factors.

The second is to use an alternative approach, when there are no existing values. One that we'll discuss

today shortly will be the use of structural analogs. In this methodology, analogs are identified based upon structural similarity between the target chemical and its more well studied analog or analogs.

And there additional options, which we're not going to talk about, but those include producing in-house expedited values or other in silico approaches that may be warranted in some situations or implemented to a degree -- in greater degree in future assessments.

So based on time frame for this first SNAPS risk assessment, we're focusing on structural analogs for provisional values in general, while considering other approaches going forward.

So at this point, I'm going to turn it over to Heather who will describe in greater detail the process for identifying and selecting health guidance values.

Heather.

--o0o--

DR. BOLSTAD: Great. Thanks, John. So this slide presents a decision tree outlining our processes to select, adjust, or develop provisional HGVs. So every chemical detected in the communities will go through this decision tree to develop a provisional HGV. However, there may be some chemicals where the development of a provisional HGV is not possible through this method.

The first question at the top of the tree is does this compound have a ranked HGV? I'll discuss which specific HGVs we have ranked in a few slides. If the compound has a ranked HGV, that HGV will be used as is or adjusted.

On the other side of the decision tree is the process for when a compound does not have a ranked HGV. In this case, HGVs from a non-ranked source, that is a source we haven't ranked in our methods, may be selected add may require further refinement. For example, in certain cases, we proposed taking the POD from the existing non-ranked HGV and adjusting it with OEHHA uncertainty factors. We'll discuss this in more detail later.

If a chemical does not have an HGV, a structural analog approach, as John mentioned, can be used to identify a structurally similar surrogate with an HGV as shown in the lower right box.

Next -- in summary, the decision tree includes three main processes. The first the selection of an existing HGV with potential adjustment. Second is development of a provisional HGV based on the POD from an existing HGV. Third is selection of a surrogate HGV using structural analogs.

Other processes for establishing HGVs, such as

expedited derivation of HGVs or full derivation may be more suitable depending on the chemical or the goals, time or resources available. And these processes will be considered in the future.

Next slide please.

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DR. BOLSTAD: So the first process under our decision tree is select and possibly adjust HGVs from ranked sources. When several HGVs are available for a specific chemical or substance, a hierarchy can be used to consistently select HGVs that are of the highest quality or are the most relevant to the risk assessment. To create a hierarchy, each HGV type was evaluated based on the parameters laid out in this slide.

These include the level of external review and public comment an HGV receives, whether an HGV was based on or developed for inhalation exposures, whether the source program is still active and thus able to update their HGVs, whether the value was intended to protect the general population including sensitive subgroups and whether the values are developed following an established methodology.

Lastly, the evaluation favored OEHHA values over those from other entities, because OEHHA values were developing to meet California health standards.

Next slide, please.

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DR. BOLSTAD: This table illustrates the evaluation of HGVs using these criteria in the context of an inhalation risk assessment for the general population. The top row lists the evaluation criteria that were on the last slide.

The first column lists the source entities and HGV types. The check marks in green boxes indicate the entity or HGV satisfies the criteria. The check minus in yellow boxes indicates that the criteria is somewhat satisfied or satisfied in some cases. And the minus signs in the red boxes indicate the criteria is not satisfied.

Based on this evaluation, as well as professional judgment, we created a ranking of HGVs be used in SNAPS risk assessment. You can see the sources of the HGVs include various programs at OEHHA, three different reprograms at the U.S. EPA, as well as ATSDR, the Texas Commission on Environmental Quality, or TCEQ, and ACGIH. You can see on the able how each type of value held up to your evaluation criteria.

Next slide, please.

--o0o--

DR. BOLSTAD: So this table represents the ranked hierarchy of chronic, non-cancer inhalation HGVs. The

OEHHA RELs are our preferred values followed by OEHHA public health goals that were based on inhalation studies followed by the U.S. EPA IRIS reference concentrations and so on. For each chemical, the highest ranked HGV from this table will be used.

For example, trimethylbenzenes do not currently have an OEHHA chronic REL or public health goal based on an inhalation study, but they do have a U.S. EPA IRIS RfC. Thus the EPA IRIS RfC would be the highest ranked value and could be adopted as a provisional HGV.

For some HGVs, Adjustment for route of exposure or duration will be performed. So chronic-to-chronic adjustments will be made as noted in the table using uncertainty factors. Specifically, HGVs intended for subchronic exposure will be adjusted for chronic exposure using an uncertainty factor selected, based on the duration of the underlying study as detailed in OEHHA's REL guidance.

Route-to-route extrapolation will be performed on oral HGVs in order to use them in an inhalation risk assessment. We expect to use this --

PANEL MEMBER GLANTZ: This is Stan Glantz. I'd just like to raise a point on this. I think that this is a generally reasonable approach, but I do worry a lot about using oral exposure data to try to get an inhalation

reference, because oral -- you know, oral consumption, ingestion of chemicals, I mean, it's totally, totally different than inhalation. And there are lots of things which, you know, if you -- if you eat them are fine, but if you aerosolize them and breath them in are really problematic.

So, I mean, I think that's one area in this, which if you're going to do it, it really needs a very strong justification based on the compound you're specifically talking about.

And I think if the -- if the internal dose, which is delivered is the -- you know, is the dominant toxicologic factor, then you could probably get away with it. But if the -- if you're talking about something that's acting on the respiratory system itself, I think that these ingested extrapolations for inhalation exposures are just terrible.

So I mean, I think the over approach and prioritization you have is quite reasonable, but that, I think, is a very, very serious problem with what you're proposing.

DR. BOLSTAD: So I was going to get into, in the next section, the fact that adjustments for absorption would be made, like for metals, because that is a critical issue between -- you know, differences between the routes.

But one thing I want to point out is that the second ranked OEHHA public health goals, we wouldn't be using the public health goal itself. We would be using the point of departure, which is based on an inhalation study, because many of the public health goals are derived from inhalation studies.

So we wanted to build upon the extensive literature review that's conducted for PHG derivation. And so that subcategory of PHGs is ranked fairly high on the table. Those based on oral studies or dermal studies, are relevant -- are arranged much lower. I think they're eighth on the table.

PANEL MEMBER GLANTZ: And I agree with that, but what I'm saying is that if you're going to use them at all, they -- you need a very specific justification that the -- that the thing that's driving the toxicologic effect is the internal dose delivered, you know, to some end organ rather than effects that you're having directly on the respiratory system, you know, where the effects are much more proximate. So I think that's an area where -- I mean, it's a real -- I'm not saying you should never try to extrapolate from an oral exposure, but I think that it's very, very risky thing to do.

I mean, I'd be interested in what -- you know what Paul Blanc and some of the other people who, you

know, think about pulmonary exposures, have to say about this. But that was the one thing that really bothered me in reading the report that you guys gave us.

DR. BOLSTAD: I don't know --

PANEL MEMBER BLANC: Since Stan asked me to comment -- Paul Blanc here -- I think the point is well taken and I think what he -- I interpreted his comments as saying when that is the source of your derivation, it will require particular attention to the issue that's been raised, so that you don't end up having a falsely unprotective guidance value.

A good concrete example, we see this in -- more clearly in animal studies. For example, the -- the association between severe lung injury and the use of biocides in humidifiers in Korea was driven by the use of seemingly not very toxic chemicals based on oral administration studies, which then clearly was not the case when inhaled. And similarly, the diacetyl story from artificial butter flavoring is exactly parallel to that.

DR. BOLSTAD: Well, thank you for your feedback. I do want to note that in our REL guidance, I believe, there are some comparisons between toxicity values and cancer potency between the oral and inhalation routes for certain chemicals and how they differ in magnitude. And in general, they are quite similar, but again the metals

are an issue. And we'll be sure to keep in mind the port of entry issues that you raise.

PANEL MEMBER BLANC: Yeah, I mean, again for -- assuming you weren't talking -- one wasn't talking about site-specific cancer in the respiratory tract. I think Stan already indicated that, you know, this would be far less of an issue and you'd really be concerned about how much can be bio -- bioavailable for target organs that were not the lung.

DR. BOLSTAD: Yeah, and maybe we should add to the table that this -- the route-to-route would be done where it's a systemic effect.

PANEL MEMBER BLANC: Yeah. And can I -- since I'm on anyway, can I also ask, it seem like all the sources that you're using to potentially draw from, are they all U.S. based?

DR. BOLSTAD: Yes.

PANEL MEMBER BLANC: And is that a conscious --

DR. BOLSTAD: Well, although international entities would be considered unranked sources or data sources for us.

PANEL MEMBER BLANC: Yeah, because I would imagine that now the European Union might have data that you couldn't get from somewhere else since -- since their policies now have changed. So as long as it wasn't -- as

long as you were willing to consider those, that's all I -- because everything you mentioned so far was domestic.

DR. BOLSTAD: Yeah, so I actually have a question for you, because our understanding is that the information in the REACH dossiers is just summaries of available toxicity -- toxicology studies and that those summaries are submitted by the registrants. Are you aware of places where the full studies can be found?

PANEL MEMBER BLANC: I guess it would depend on what was submitted, but it might at least give you a lead as to a material where you were lacking domestic data and the REACH data suggested that there could be a problem. So, yeah, I -- that's why I bring it up.

CHAIRPERSON ANASTASIO: Mike, did you also have a comment?

PANEL MEMBER KLEINMAN: Yes. Thank you. One of the ways that these -- these things are adjusted are through uncertainty factors. And I'm wondering whether there's someway to develop some rules or guidance for using -- you know, for example, an uncertainty factor because the route is different, when you're stuck for developing a guideline and you don't have any other data to go with.

DR. BOLSTAD: That is a possibility. That's not

currently done in REL development, but that is a possibility that we could consider.

PANEL MEMBER GLANTZ: Yeah. I actually think that's not a good idea, because if you look at the other uncertainty factors that have been developed over the years, they -- they have some kind of reasonable tie into the underlying biology. And the concern that I have of this oral versus inhalation thing is when the target organs are different. And I just -- I mean, the diacetyl example that Paul mentioned is important. And, in fact, this has been a very hot area of investigation in looking at flavoring agents in e-cigarettes, because a lot of them -- I mean, most of them are generally recognized as safe for ingestion. And they really tear up the lungs when you aerosolize them and inhale them.

So I think that -- that's the one area in the document. I just think you -- you've really got to be very careful in looking at non-inha -- non-inhalation -- you know date -- you know, data derived from non-inhalation sources.

I'm not saying you could never use it, but I think you need to be very, very careful, and it needs to be justified very explicitly when you are doing it. That's my contribution to the meeting. I've been sitting had quietly waiting to jump on this.

CHAIRPERSON ANASTASIO: Thank you, Stan. That was an excellent contribution.

PANEL MEMBER GLANTZ: Yeah, I think this is a really important point.

CHAIRPERSON ANASTASIO: Yeah, I agree. All right. Heather, can you continue.

DR. BOLSTAD: Yes, thank you. So back to the route-to-route extrapolation. I'll just finish that by saying we expect to use simple methodology, again I should add for the systemic end points, assuming that the dose delivered to the target organ is the same for oral and inhalation routes for most chemicals.

Additional, adjustments for absorption would be included for metals or other chemicals as appropriate. I want to note that the lowest ranked source in value in this table is an occupational exposure limit from ACGIH, and I'll discuss its adjustment in a couple slides. So overall a ranked table of HGVs, like this shown in this slide, including those from other entities will allow us to quickly select a reliable value for each chemical and enable the completion of future risk assessments.

We chose to include the ACGIH values while omitting other occupational limits, such as those from OSHA or NIOSH, because the derivation of the ACGIH values is health based and documented.

Next slide, please.

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DR. BOLSTAD: This table presents the ranked hierarchy of acute noncancer inhalation HGVs, as well as how they could be adjusted. As you can see, fewer author -- fewer authoritative entities produce acute inhalation and GHGs. The OEHHA acute RELs are preferred values followed by ATSDR, MRLs; TCEQ, REVs; and so on.

Notably, again, the load -- the lowest ranked value is an occupational exposure limit from ACGIH.

Next slide, please.

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DR. BOLSTAD: So this slide provides a little more detail about how we will adjust the ACGIH occupational a HGV. As you saw in our hierarchy, it is not our preference to use occupation values. However, they can be informative when other HGVs are not available. The ACGIH HGVs are occupational exposure limits for working adults. They will be adjusted for duration, since they are meant to be protective only over a work shed.

So for the chronic values, the value will be adjusted for continuous exposure, seven days per week instead of five days per week and will also be adjusted for the air intake during the workday, which is commonly considered to be ten meters cubed, whereas intake for the

whole day is considered to be 20 meters cubed.

For the acute values, the ACGIH values are intended for a 15-minute exposure duration and will be adjusted to breathe protective over an hour duration.

Finally, the ACGIH values are not intended to protect the general population. And thus, an additional default uncertainty factor will be applied. A factor of 300 will be used if the POD was based on a human study, and 3,000 if it was based on an animal study.

This uncertainty factor is comprised of an intraspecies uncertainty factor of 30 to protect sensitive populations and interspecies uncertainty factor of 10, if based on an animal study, and an additional 10 to account for other potential uncertainties, such as study duration, database efficiency, and the potential for additional susceptibility of children.

We expect that these adjustments within produce provisional HGVs that are health protective for the general public and informative to the community.

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CHAIRPERSON ANASTASIO: Heather we have a questions from Kathie.

DR. BOLSTAD: Oh, yeah. Sorry. I'm not looking at --

PANEL MEMBER HAMMOND: Thank you. Yeah, just this was fine. But one quick comment is that the ACGIH TLVs can include ceiling values, in addition to the STELs. So the ceiling values are concentrations which should never be exceeded in for any time period. So just you might want to include those within the possible things, since for some compounds, there are no STELs just ceilings.

DR. BOLSTAD: Yes, we did consider those, and we have a -- placed them in the category of data sources, so unranked. We were a bit concerned because they're really designed for only a couple minutes in peak exposure, and we're really trying to be protective of the general population over an hour period for acute exposure, but we will definitely consider those.

PANEL MEMBER HAMMOND: All I'm saying is that the -- I mean, I think what you've done here makes sense, but the point of a ceiling is that you should not be exposed to that for five minutes and then zero exposure for 55 minutes and have it average out okay. That's not acceptable, so it's a different --

DR. BOLSTAD: Right.

PANEL MEMBER HAMMOND: And that would relate to perhaps if you had a -- an industrial release someplace that had a short-term exposure or an accident of some

sort. So it -- I'm just saying I think that it has value. It definitely is not your one-hour value, but one would want to be cognizant of it where they exist.

DR. BOLSTAD: Okay. Thank you.

PANEL MEMBER HAMMOND: Um-hmm.

DR. BOLSTAD: Okay. Next slide, please.

So the previous few slides have followed one process in the decision tree, wherein we have discussed the ranked HGVs, how they were evaluated and ranked, and what adjustments we expect to make.

The next process in the decision tree is followed when there is an HGV from an unranked data source. In this case, the available HGV may require further refinement and it may be appropriate to use the POD from that value and adjust it with uncertainty factors per OEHHA's REL guidance.

Next slide, please.

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DR. BOLSTAD: In this process, the provisional HGV will be the POD from the existing HGV divided by uncertainty factors. And the types of uncertainty factors used are listed on this slide, and they include uncertainty factors for LOAEL to NOAEL extrapolation, subchronic to chronic extrapolation, animal to human extrapolation, human variability and database deficiency.

The database deficiency factor is applied to account for potential deficiencies in the database. For example, when key studies, such as developmental studies, are not available for consideration, a database factor is applied to account for the possibility that developmental endpoints might be more sensitive than the critical endpoint.

REL guidance gives a detailed description regarding how to apply these factors. And we will generally follow this guidance. If an unranked HGV does not have a documented point of departure, we will not use that value, and we'll select another value or use an alternative approach.

So I will now hand it over to Rachel who will discuss our structural analog approach.

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DR. HIRANI: Thank you, Heather. Next slide.

So we have discussed two process in this decision tree, one using an (inaudible) value of (inaudible) uncertainty factors.

The third process is there's no (inaudible) identified or the values are not well documented. In these cases, an alternative approach can be used. We are proposing to use a structural analog approach, but in some cases when there are available data, this may also include

in-house expedited development of a provisional health guidance value.

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DR. HIRANI: The structural analog approach is based on the basic principle that, in general, structurally similar chemicals can share metabolites, act through the same modes of action at the same target site, and exhibit similar toxicity. However, (inaudible)

So in this methodology, the first is step identify the structural analogs to the target chemical, that is the chemical of concern without a health guidance value. We propose using the U.S. EPA analog identification methodology, or AIM tool, and/or the U.S. EPA CompTox Chemistry Dashboard similar compounds feature.

Once the structural analogs have been determined, the analogs' health guidance values will be identified using the same sources that we discussed previously in this presentation. The analog with the highest structural similarity score, that is the one that's most structurally similar to the chemical with one or more ranked health guidance values will be selected. The selected analogs values will be determined and adjusted per the ranked table as previously described. The selected analog and health guidance value will be used as a surrogate in the

assessment.

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DR. HIRANI: An example of this approach is shown for m-diethylbenzene with chronic non-cancer health guidance values. So m-diethylbenzene does not have a ranked health guidance value that CARB has used to identify structural analogs.

Ethylbenzene is the structural analog with the highest similarity score and one or more ranked health guidance values. Per the ranked table, the OEHHA chronic REL for ethylbenzene would be selected as a surrogate value and used in the risk assessment.

So compared to other methodologies using empirical data for a specific chemical using chemical surrogates solely based on structure produces a provisional health guidance value with lower confidence. However, we believe this approach is likely to provide some understanding of the potential toxicity for otherwise data-poor chemicals.

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DR. HIRANI: In summary, we expect that this methodology will allow for the efficient selection of health protective values for many chemicals, so that they

can be included in our assessment of the air monitoring data in the SNAPS communities. Although, other entity's values or structural analogs is not as ideal as having a REL adopted through our traditional processes, it will provide useful information on the potential health risks from airborne chemicals.

Further, this evaluation is likely to identify higher priority chemicals for poor traditional health guidance value development at OEHHA. Thank you for listening to our presentation on this methodology and I'm going to turn the slide show back to John.

CHAIRPERSON ANASTASIO: Great.

DR. FAUST: Thank you to -- thank your Rachel and thank you, Heather for the -- for the overview.

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DR. FAUST: So just this final slide includes some areas that we thought might prompt discussion by the panel. I mean, obviously we've heard discussion already about long the certain concerns along the way. But let me go ahead and describe the slide.

So some of the areas that input would be welcome is in the identification and selection of health guidance values.

Do the sources of potential HGVs where the acute and chronic non-cancer endpoints appear complete? Are the

criteria described appropriate for selection of selection of useful HGVs? Is it reasonable to use these HG -- HGVs for risk -- risk screening purposes with the limited adjustments described? And are there alternative approaches to adjusting HGVs that we should consider?

On the topic of adjustment of occupational HGVs, we propose to adjust with a factor of 300 when the underlying point of departure is from a human study and 3,000 when it's from an animal study. Is this reasonable?

And then in the area of using surrogates and structural analogs, what factors should we considering in using a surrogate approach in the context of a screening-level, multi-pollutant risk assessment? Is it reasonable to identify analogs based on structural similarity? Are there other platforms for analog identification that we could consider? And then for this risk screening context, is it reasonable to select the highest ranked HGV for the analog with the highest Similarity score.

So at this point, I will turn it back to the Chair.

CHAIRPERSON ANASTASIO: Great. Thank you, John and also Heather and Rachel for the presentation. I think this is a very important task that you guys are working on. You know, if we're ever going to catch up with the

number of additional chemicals added every year, we're going to need a broader approach like this. So I think it's great that you're working on this.

I'm going to open it up first to the Panel. And I see that Mike has a question. Mike, go ahead.

PANEL MEMBER KLEINMAN: Yeah. On this adjustment of the occupational HGVs, could you go back over how you come up with the 300? What are the uncertainty factors you're throwing in there?

DR. BOLSTAD: Yeah, I could answer that. I believe it's probably around -- yeah, there. So 30 for interspecies -- or sorry, intraspecies variability, so human variability to protect sensitive populations, and then 10 for interspecies, and then 10 to address any remaining uncertainties.

So if the POD was from an animal study, it's 10-fold higher than our factor for the human study, because of the interspecies factor, so 30, 10 and 10.

PANEL MEMBER KLEINMAN: Do you think that's adequate to cover, for example, children versus adults?

DR. BOLSTAD: Well, we have done kind of a proof-of-principle analysis that indicated this approach would be protective based on compounds for which we have OEHHA RELs and comparing them to ACGIH values with adjustments. So we are confident that this would be

protective.

PANEL MEMBER KLEINMAN: Okay. Thank you.

CHAIRPERSON ANASTASIO: Other questions from the panel or comments?

If so, please raised your hand.

PANEL MEMBER GLANTZ: So this is Stan.

CHAIRPERSON ANASTASIO: Yeah, Stan, go ahead.

PANEL MEMBER GLANTZ: I -- you know, I'd be interested in what people who know more about chemistry than I do think about the structure activity approach they're proposing, you know, at the end of the process. I mean, overall, it seemed reasonable to me, but I really don't know what I'm talking about. So I'd be curious what some of the Panel members who do know what they're talking about think about this approach.

CHAIRPERSON ANASTASIO: I can say from a chemical reactivity point of view, it's a very powerful tool that was used very frequently to try to understand the reactivity of species and how it might vary among a family. I can't say how this approach works in toxicology. So I don't know if someone else on the Panel can address that.

PANEL MEMBER KLEINMAN: You know, in general, you know, structural analogs can work quite well. There are a couple of places where certain compounds have unique

toxicity in various organ system. So for example, heptane can be much more neurotoxic than you would expect from looking at pentane. So there are some things that this won't work, but it's a -- it's a good first approach.

CHAIRPERSON ANASTASIO: All right. Thank you, Mike. Thank you, Stan.

Ahmad, go ahead.

PANEL MEMBER BESARATINIA: Yeah. I just want to also add that structurally-similar compound do not necessarily exhibit similar properties. Example of those are like enantiomers or isomers of the same compound that have vastly different, you know, biological effects. The best example of them are from polycyclic aromatic hydrocarbon group.

DR. HIRANI: Yeah. I think we know that there are limitations to this analysis and that's why it's sort of our -- our last -- the last thing we do in this process. And I think we'll try to move forward with it and acknowledge the limitations that you guys have brought up.

DR. BOLSTAD: And I think with our experience thus far, the structural analog approach would largely be used for simple hydrocarbons and some aromatic. And in terms of the programs identifying structural analogs, so far they do seem to distinguish between like on one hand

the ortho- and meta-isomers versus para -- or sorry, sorry, meta and para versus ortho, which is a little different than an enantiomers, but that is another thing we'll keep in mind.

PANEL MEMBER ANASTASIO: Thank you, Heather. Thanks, Mike.

Joe, you have a question?

PANEL MEMBER LANDOLPH: No, just a comment. Yeah. It's a -- it's tricky area. But I would say for polycyclic hydrocarbons, you know, you can count -- calculate the resident stabilization of the carbonium ion and using a bay-region theory by Don Jerina with that calculation, you get pretty good results. So I wouldn't be afraid to use that -- those calculations for that. I wouldn't be afraid to use them for aromatic amines and nitrosamines.

So you can get some reasonable correlation. It's not to say you shouldn't keep checking things and make sure things don't go off the rails later on, but there are for certain groups of compounds, they work pretty -- those calculations work pretty well for carcinogenesis.

CHAIRPERSON ANASTASIO: Thank you, Joe.

Paul.

PANEL MEMBER BLANC: Yeah. I'm glad Joe threw in that thing. So this whole process can you just clarify

again, this is for cancer endpoints or non-cancer endpoints?

DR. HIRANI: It think it will likely be for non-cancer endpoints.

PANEL MEMBER BLANC: Okay.

DR. HIRANI: For the cancer endpoints, most of the monitored chemicals appear to have a potency value.

PANEL MEMBER BLANC: Okay. So if we're talking about noncancer endpoints, because I thought that's what we were talking about, at least one -- one thing you're going to be very interested in is potential sensitizers, I would assume. And for that, there is a -- there has been a body of work on structural analogs and the -- the author of that work is a guy named Aegius in Britain, A-e-g-i-u-s. And he actually has an online algorithm that you can plug structures into and get an assess -- an assessment of their likelihood to be sensitizing agents.

DR. BOLSTAD: Yeah, we are aware of some programs the predict sensitizers. And thankfully, it's because it's fairly easy to protect based on, you know --

PANEL MEMBER BLANC: Right.

DR. BOLSTAD: -- nucleophilic reaction with proteins, so --

PANEL MEMBER BLANC: So you might want to -- you know, as you sort of pilot of the pilot focus on that,

since that's where the -- you know, the -- the strongest argument could be made. Because if you start to say I'm going to predict what's going to be an -- a hepatotoxic agent, it's not going to be so easy.

DR. HIRANI: Yeah, that's a -- that's a good point, the endpoint, that we're thinking about important. And here we're trying to almost just borrow the -- an already established health guidance value, inhalation health guidance value --

PANEL MEMBER BLANC: Yeah.

DR. HIRANI: -- rather than focus endpoint by endpoint, which as you point out, can be very difficult for reproductive and other effects.

PANEL MEMBER BLANC: And since -- and since sensitization is particularly an issue for inhaled route of administration, it would make sense to, you know, put particular energy there, I suppose, and this would be your sort of backup to -- you have no other data that you can base -- base your thoughts on. Although I would -- coming back to Stan's trepidations, I would say that if all you have is oral, and what you're thinking about is sensitization, you might want to think about an -- ana -- an analog approach rather than oral data --

DR. BOLSTAD: Yeah.

PANEL MEMBER BLANC: -- as example.

DR. HIRANI: We could screen all of these chemicals for predicted sensitization in some of the programs that you mentioned.

DR. BOLSTAD: Yeah, I actually wanted to ask the Panel about that. If we had to use an oral value or a value based on oral data, would you prefer route-to-route, versus analog, versus not using a value?

CHAIRPERSON ANASTASIO: The one thing you could do is calculate it both ways and see which one ends up being more health protective. That's one initial approach. But then, as people have mentioned already, you know, you do have to be careful with either approach.

Paul, did you want to speak on that?

PANEL MEMBER BLANC: Yes, I wasn't completely clear how that would work out. So you have an oral value for something and you're going to extrapolate to an inhalation value, and then you're saying but if I had -- if it was an analog of something that I do have an inhalation value for --

DR. BOLSTAD: (Nods head.)

PANEL MEMBER BLANC: -- I would look at that as well. I wasn't sure mechanistically what the -- what -- what the analog would be to.

DR. BOLSTAD: Well, it would be using an HGV from an analog for inhalation like you just mentioned versus --

well, the difference is route and whether the data comes from the compound itself, so just weighing that.

So on one hand, you'd have inhalation data from an analog versus oral data from your target compound.

PANEL MEMBER BLANC: Okay. Now, I do understand and I would say that, first of all, pragmatically, Cort's idea is relevant, you know, if you -- they were wildly disparate, that would be give you pause. And I would say that, in general, I would prefer ana -- a strong analog with something you do have inhalation data for.

Let's circle back to diacetyl, right? For some of the diacetyl analogs, which are being promoted for substitution, you know, the pentane analog, we also don't have -- we don't have inhalation data for those. So if I had an analog of diacetyl, which we do now have inhalation data for, I would treat it like diacetyl not like some oral version, if that makes sense. I mean maybe Stan should comment on that, but...

DR. BOLSTAD: Well and diacetyl is one of those cases where the effects are in the lung, so I think --

DR. HIRANI: Yeah, I think --

DR. BOLSTAD: -- we'd be less likely to perceive route-to-route in that case, if the most sensitive effect was in the lung.

PANEL MEMBER BLANC: Yeah.

DR. HIRANI: I think the thing is the chemicals will have -- will be data poor. We won't know if they have some lung effect, but they might have a systemic effect that we'll use the oral value for. So it might just have to be a caveat in our report that if those particular chemicals have a local effect in the lung, that is just an unknown at this time.

PANEL MEMBER BLANC: Yeah, that would be -- that would be reasonable. And again, as Cort said, check the analogs too, in case there is -- you, of course, feel much more secure if the analogs had been tested by inhalation and there was no target organ toxicity to the lung, right?

DR. HIRANI: Yep.

PANEL MEMBER BLANC: And I think --

CHAIRPERSON ANASTASIO: Okay. Thank you. Sorry. Go ahead, Paul but Beate has got a question. She's been waiting.

PANEL MEMBER BLANC: No. And you do have also examples of things where when they're ingested they have targeted lung toxicity.

DR. BOLSTAD: Right, but that would still be consider a systemic effect, right?

PANEL MEMBER BLANC: Well, you know, I just -- I just point it out. It's not very common, so it's not -- I don't think that's going to -- you know, but if you add

some paraquat analog, you'd have to think about that.

CHAIRPERSON ANASTASIO: All right. Thank you, Paul.

Beate.

PANEL MEMBER RITZ: Yeah. I was just thinking when you said systemic effects, how are you going to deal with endocrine disruption. Would structural analogs really be the right way to go?

DR. BOLSTAD: Well, that's an interesting question. I can see how relative potency would be very useful for endocrine disruption, because the in vitro receptor binding or activation transactivation assays would be more available than in vitro, or than in vivo inhalation studies. Rachel, do you want to comment on that?

DR. HIRANI: I'm not sure. You're saying the structural analog approach might not identify endocrine disruptors. Is that --

PANEL MEMBER RITZ: No, it might not be appropriate when it comes to toxicity. That's what I was thinking about.

DR. HIRANI: Yeah, I think that might be a limitation of this method. Most of the chemicals -- I'm trying to think of any are likely to be.

DR. BOLSTAD: Well, DEHP is, but we do have a

MADL for that.

DR. HIRANI: Right. I mean, we -- we could incorporate a separate screening to look at them through some of the online programs that give whether or not they're likely to interact with like estrogen receptors. We could do a separate screening, but I don't know that we've focused on that endpoint. We're trying to look at, you know, all endpoints at one time.

PANEL MEMBER RITZ: Well, given that these substances are really important and we have quite a few air contaminants that might be endocrine disruptors, I would really recommend that you think about this a little bit more.

DR. BOLSTAD: Do you have an example of an air contaminant that endocrine disruption is its most sensitive endpoint?

PANEL MEMBER RITZ: I'm not sure that it's the most sensitive, but I mean PAHs are endocrine disruptors, right, so --

DR. BOLSTAD: Yes.

PANEL MEMBER RITZ: -- it's probably more of a question of at different levels they may be doing different things, but that doesn't mean that just the highest level is what we should be concerned about health protection. So even at lower levels, if we're going

towards health protectiveness, you should be worried about what are they still doing at lower levels, right?

DR. BOLSTAD: Yes. Yes.

PANEL MEMBER RITZ: And in that sense, it would be relevant.

DR. BOLSTAD: Well, and thankfully for the PAHs, there's more in vitro data on comparative potency that informs the toxic equivalency factors and -- but for other compounds, it's an interesting question how well structural similarity will predict endocrine disruption.

PANEL MEMBER BLANC: You might look -- look up triclosan and its congeners.

DR. BOLSTAD: Yes. Is triclosan volatile?

PANEL MEMBER BLANC: No.

DR. HIRANI: I don't believe it's been monitored in the community.

PANEL MEMBER BLANC: No, but just as a -- just as a -- you know, if you're asking that question.

DR. BOLSTAD: Yeah.

PANEL MEMBER BLANC: But no, it's not volatile, at least it has one thing going for that.

DR. BOLSTAD: Right.

(Laughter.)

CHAIRPERSON ANASTASIO: All right.

PANEL MEMBER BLANC: Beate.

CHAIRPERSON ANASTASIO: Go ahead, Paul.

PANEL MEMBER BLANC: For Beate, I -- you really threw me off guard asking about endocrine disruption. I was almost sure the question was about to be about central nervous system degenerative disease.

PANEL MEMBER RITZ: Well, yes, that's another issue, but I don't know how to -- how to formulate that yet with respect to the structural analogs. I think we know so little about it, that it's almost scary, especially when it comes to neurodevelopmental effects. But also long-term neurodegeneration, right? There so much involved in a human.

CHAIRPERSON ANASTASIO: Okay. Thank you, Paul and Beate.

Last call for Panel comments or questions?

All right. I don't see any, so I'm going to move it over to public comment. A couple notes first. If anyone is on a phone and you would like to ask a question, please press star nine and that will appear in Zoom for us as a raised hand and I'll know to call on you.

And then to mute and unmute yourself on the phone, it's star six. So if I call on you, please unmute star six. And then when you're done, mute again.

Also for people who are on the Spanish conference line, apparently they're not able to interface with Zoom.

So Marci and Claudia, if you could facilitate people who are on the Spanish line asking questions, that would be great.

Okay. And I see Claudia said thank you -- will do, so thank you Claudia.

Okay. So I open it up then to the public. Any comments about this topic, presentation?

Let's just wait a minute, since I know some of these technologies are slow.

And, actually, while we're waiting, John, Rachel, and Heather, it seems like in this process, one of the things you may be able to identify are compounds where we really do need an animal study or we really do need a specific fully addressed REL. So I imagine that's part of your thinking, as you go through this, but it does seem like a great way to help identify compounds where we really need data and we really need to potentially develop a very specific and quantitative REL or cancer potency factor.

DR. BOLSTAD: Definitely. And whether they're detected or not in staff's communities will help inform that too.

CHAIRPERSON ANASTASIO: Yeah, that's a good point.

That's the end of my filler.

Oh, wait. Here go. We've got a -- we've got a question in chat from Amy. She says Given -- or sorry, Amy Kyle. "Given the grave deficiencies of the databases, I'm wondering if the Panel has any ideas about what the State could do to remedy that, especially given the collapse at EPA -- federal EPA"?

So, Amy, I'm not entirely sure if the Panel has any ideas about what the State can do in terms of filling outfit a databases, getting additional data. Maybe you could clarify your question in the chat.

I mean, one of the things that we've discussed several times with OEHHA on this topic is, you know, us trying to help them identify other sources of data. So that's something we've definitely touched on.

PANEL MEMBER GLANTZ: Well, this is Stan. I mean, I think subject to all of the caveats and issues that were brought up in this, I think, very excellent discussion, I mean, I think what they're trying to -- exercise they're going through is trying to do exactly that. I mean, the State doesn't have the resources to duplicate the National Toxicology Program.

But I think -- I think this is -- you know, the general approach outline here is good. I think we've raised a bunch of deep issues that need some further attention and polishing. But overall, I think this is a

good systematic beginning to try to deal with things, where you don't have total data.

So I mean, I -- I'm impressed actually, having given you a hard time about part of this. But I think the overall effort is quite impressive. And I think you should be taking the comments that came in from the Panel and use it to generate the next iteration of this document.

CHAIRPERSON ANASTASIO: Yeah. Thank you, Stan. I second what you're saying about how this is a really important effort and it's going in a very good direction. So congrats to OEHHA on that.

So I see Amy has clarified her question a little bit for me. She's talking about how do we get data for things that haven't been tested or assessed. I don't -- yeah, and I don't know. I don't know if anybody on the Panel or anybody at OEHHA has thoughts about, you know, how do we get more data?

DR. BOLSTAD: Oh, one good thing is that the development of in vitro methods or ex vivo methods for inhalation toxicants is progressing. You know, it's kind of been behind hepatotoxicity tests in vitro. And the ToxCast data isn't really useful for inhalation toxicants, because they only test things that aren't volatile. So hopefully as those methods become more available and go

through validation and whatnot, it will be much cheaper to do, you know, at least some screening of those compounds.

CHAIRPERSON ANASTASIO: Well, that's an interesting point, right, because right now OEHHA only develops guidance values based on either animal or human data, right? So do you see a point where OEHHA starts using in vitro approaches?

DR. BOLSTAD: Potentially.

CHAIRPERSON ANASTASIO: Wow, that would be great. Yeah. It sounds like another uncertainty factor. I know you guys love your uncertainty factors, so I vote for two square roots of 10 on that one.

I don't see any other public comments. So -- woop, sorry -- with that, I'm going to move to the final item, which is just a note about our next meeting. So the next SRP meeting will be on Thursday, January 14th, 2021 and 9:30 a.m. And we expect to go again until the mid-afternoon like today. I'm guessing it will be remote, because we love Zoom so much. But if there's some fantastic improvement in public health, then I would love to see you all in person.

With that, I would love to entertain a motion to adjourn.

PANEL MEMBER GLANTZ: So moved.

CHAIRPERSON ANASTASIO: Can I get a second?

PANEL MEMBER KLEINMAN: Second.

CHAIRPERSON ANASTASIO: Can I get some ayes?

(Ayes.)

CHAIRPERSON ANASTASIO: All right. Fantastic. Well, thank you, everyone. I appreciate all the speakers. I'd like to thank Christal again for her technical wizardry, which if it's not yet should be a CARB job classification. And I appreciate the Panel and all your input. I think this was a very productive meeting. And I look forward to seeing you in January.

PANEL MEMBER KLEINMAN: Okay. Thank you, Cort.

CHAIRPERSON ANASTASIO: All right. Take care, everyone.

(Thereupon the California Air Resources Board, Scientific Review Panel adjourned at 1:51 p.m.)

C E R T I F I C A T E O F R E P O R T E R

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

That I am a disinterested person herein; that the foregoing California Air Resources Board, Scientific Review Panel meeting was reported in shorthand by me, James F. Peters, a Certified Shorthand Reporter of the State of California;

That the said proceedings was taken before me, in shorthand writing, and was thereafter transcribed, under my direction, by computer-assisted transcription.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of October, 2020.

JAMES F. PETERS, CSR
Certified Shorthand Reporter
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