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William F. Carroll, PhD (Remote Attendance)

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Eileen Sheehan

APPEARANCES (CONT.)

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P R O C E E D I N G S

9:06 A.M.

PANEL CO-CHAIR FONG: Good morning.

THE OPERATOR: This is the Operator and welcome. And thank you for standing by. At this time, all participants will be on a listen-only mode throughout the conference.

And I'd like to introduce your host for today's conference. Nathan Schumacher, you may begin.

PANEL CO-CHAIR FONG: Nathan.

MR. SCHUMACHER: Okay, welcome. Good morning, everyone. You've probably heard most of what I'm about to say, but I'll say it again.

Welcome to the Green Ribbon Science Panel meeting. First of all, if there is a fire or we have to evacuate for some reason, you know where the exit doors are. You probably know where the stairs are by now. And the restrooms are in the same spots, they haven't moved overnight.

Let's see, okay. There are ceiling-mounted signs for the exits, as you may have found in the past. And you go downstairs and we'll meet across the street, if we have to evacuate.

Okay. Also, additionally, we do have -- this is an open meeting and so I will announce, under Bagley-Keene Open Meeting Act, please refrain from discussing the agenda

topics with the Panel members, in accordance with the requirements of that Act during the off time. During the breaks or at lunch, or something like that.

There is a limited time set aside for public comment, so we will allow for public comment. We do have comment cards. If they fill that out, let us know that you want to make a comment and we will do that based on the comment cards that you fill out. So, please get that to me. I always see a few members of the public, but please keep that in mind if you want to comment. The cards are at the back table, behind you.

We do wish and would want, would remind you that today's comments should be directed to the Green Ribbon Science Panel and on the agenda topics. Public comments directed to DTSC are not appropriate at this particular meeting. So, please keep that in mind when you decide to comment or if you decide to comment.

All right, that's enough of the dos and don'ts. I'll turn it over to Meredith, who has a few opening remarks.

PANEL CO-CHAIR MORAN: Good morning. I hope that all of you are as energized by yesterday's conversations, as I was. I know staff were very enthusiastic in terms of the takeaways, and the things that we can use to make the guide even stronger, and even some ideas for future exploration.

So, we appreciate all the conversation, all the thoughtfulness and the energy that was brought, yesterday, to the discussions.

And we're looking forward, today, to talking about the future, our future product selections, our tools that we've developed to make those selections.

And just as a slight word of setup, part of this is reflecting back to you some of the things that we've absorbed from the Panel about making those selections about future products. And, also, some of the things we've heard from stakeholders about a need for transparency, and to try and understand how it is that we're making decisions.

So, as we develop these tools and methods, we want to share them with folks, get some reflection back on those tools and those methods, and begin to have conversations about how to continue to strengthen our work.

So, thank you again for your time and dedication to the Panel. And I'll turn it over to Art.

PANEL CO-CHAIR FONG: Good morning. I just want to echo Meredith's comment about how productive yesterday's meeting was. It was just amazingly -- in terms of the members being actively engaged and being very constructive.

And in terms of how productive it was, I think that's due in large part to my Co-Chair, who did such a fantastic job facilitating the conversation and discussion

around the Stage One AA Guide, yesterday. Kelly, thank you very much for the excellent job.

Let me just check and see if Bill Carroll's on the line today. Bill, are you on? I'm not hearing a response. I assume he's not on.

Some of the members, Panel members had to leave us early today, and so I'm just going to ask the Panel members to go -- we're going to go around the room and ask the Panel members to identify themselves, so the audience on the webinar will know, you know, who's here today.

So, let's start with Dr. Anderson.

PANEL MEMBER BAIER-ANDERSON: Thank you. Cal Baier-Anderson.

PANEL MEMBER SUTTON: Rebecca Sutton, San Francisco Estuary Institute.

PANEL MEMBER BLAKE: Ann Blake, Environmental and Public Health Consulting.

PANEL MEMBER GEISER: Ken Geiser, University of Massachusetts, Lowell.

PANEL CO-CHAIR MORAN: Kelly Moran, TDC Environmental.

PANEL CO-CHAIR FONG: Art Fong, Apple.

PANEL MEMBER ZARKER: Ken Zarker, Washington State.

PANEL MEMBER CARINGELLO: Mike Caringello, S.C.

Johnson.

PANEL MEMBER HOLDER: Helen Holder, HP.

PANEL CO-CHAIR FONG: Thank you. So, today's agenda is going to focus on the DTSC's Chemical and Product Evaluation Team. We're going to receive an update on the Team's approach to implementing the work plan and discussion on role of chemical classification and implementation of the regulations.

And we will also have a public comment period, followed by a Panel discussion on the Chemical and Product Evaluation Team's presentation.

We're very fortunate this morning to have Andre Algazi present information on the program's activity to research chemicals and products from the work plan product category. Andre's a supervisor in the Consumer Products Program, and is the leader of the Chemical and Products Evaluation Team.

Before Andre jumps into his presentation, I'm going to ask him to introduce his team to us, since I'm not -- I think this is the first time we've met some of your team members.

MR. ALGAZI: Okay, absolutely. I'm not sure the microphone is pointing appropriately.

So, I don't have my entire team here today. There are about, I would say, 18, 16 to 18 active members of the

Chemical and Product Evaluation Team. A couple of them are here. To my right, Eileen Sheehan, who is on loan to us from USEPA. Daphne Molin, to Eileen's right. I see Lynn Goldman, our attorney. I see Ann Cooper Doherty. She's a member of the team, as well. Diana Phelps, in the back.

So, anybody else, any others? So, as I say, there are about 16 to 18 people who are pretty actively engaged, including staff from the Safer Consumer Products Program and a contingent of toxicologists from our Human and Ecological Risk Office. So, I probably can't rattle off their names from memory, but they're all excellent.

PANEL CO-CHAIR FONG: Thank you very much for the introduction. We look forward to hearing your presentation.

MR. ALGAZI: All right, thank you. I think I'm going to stand.

So, thank you, Art, for the nice introduction. I spoke with you all, I was checking the old agendas and it was in April, I guess, of last year we were much earlier in our process at that time.

And then, subsequently, we've had a couple of GRSP topics related to the work plan. And so, really, there are two parts to what I want to talk about and then we have some questions that we wanted to have you weigh in on.

And so the first is just sort of how -- what we've been doing with what we've learned from our first round of

product selection. And just sort of as a reminder of the timing, we were doing our scoping work in 2013 and 2014. We announced the three priority products last year. And then, subsequently, we were -- or are concurrently developing the work plan and we talked about the work plan with you last year, as well.

And as a reminder, there are seven product categories laid out in the Priority Product Work Plan and five policy priorities that we identified as important to us during this three-year cycle.

So, after we had gone through the iterative process of trying to select products, and we had some constraints that I'm going to talk about, during the first cycle, we sort of regrouped. We had a couple of meetings, facilitated meetings among the team members to talk about what we thought went well, and where we needed to sort of develop some new tools and processes, and our existing ones.

So, we thought that having a template for our priority product profile that kind of lined up with Article 3 of the regulations, which are the prioritization factors that we need to consider in identifying a priority product with a chemical of concern. That was a successful tool that we developed. We did identify some improvements that we could make or some things we could incorporate.

We did, initially, have some conversations with

other sister agencies with our -- within CalEPA and outside, and about what we were doing. And a number of them suggested things that we might pursue. And some of those suggestions we did look at in the team.

And we thought that inasmuch as the priority product profiles explained our rational, they did stimulate some discussion. Not all of it was sort of universally positive, but we did actually have a lot of learnings from our discussions with stakeholders about the scope of our products and chemicals, and we did make some clarifications.

All of those things are successes from our perspective.

And Meredith is pointing. Okay, I'll hold it. Oh, okay, I tend to be looking away from the mic. Sorry for the noise, folks. And I've got it turned around backwards. I'm just going to hold it, okay. All right. Apologies to the webcast listeners.

So, we did have a number of challenges during the initial round of product identification. And one of them was just sort of, I think, something that any new program would sort of encounter, which is we really had to figure out how we were going to tackle it. We sort of made some assessments of what the regulations required and we started out the best we could. But the fact that we were building from, really, no process and no tools meant that, you know,

some of the things that we tried weren't as successful as others.

We also were -- we started our work just due to the timing of the regulations and the deadline that we had for announcing products, we were working while the regulations were still sort of in draft.

The Candidate Chemicals List is also kind of a big logistical challenge to get a handle on what all the chemicals are that are on the 23 list referenced in our regulations.

And Daphne Molin, of my staff, has been working on that for, I don't know, a year and a half or something. And we've finally got a really good handle on what is and isn't a candidate chemical. And we have a nice, searchable database that I think we've talked about to you all, previously.

But at the time we were sort of researching possible chemicals of concern and possible priority products there was some -- we didn't have a perfect handle on exactly what was and wasn't on the list.

We've had some challenges finding certain kinds of data and current data. And again, we were working on trying to identify or develop new tools that we didn't always have.

So, out of all those discussions we decided we wanted to formalize our process a bit to kind of map it out,

build in some check-ins with our decision makers, Dr. Williams, our Deputy Director, our Director, people at the CalEPA Agency level. We tried to sort of formalize the process with some tools that spelled out what people's roles were, things like that.

And as mentioned yesterday, we identified a need to develop some more expertise in understanding markets.

So, here are some goals that we sort of are trying to achieve with our new processes. So, what we've come up with in my team is a six -- right now, it's a six-step process. We're sort of continuing to refine it. And it starts out with chemicals, and then we start looking at the work plan categories, and then we have some public engagement.

So, the idea is, and I'm going to talk a little bit more about the first phase, which is where we -- we're kind of in between phase one and two right now, how that works.

So, the phase three, the important thing about this slide is the idea that we will do some initial research within the framework of the Priority Product Work Plan, and the policy priorities laid out in the work plan, those five priorities. And then, before we select anything, we're going to be engaging with our stakeholders in a variety of forums, public workshops, likely, and sort of lay out what

we've found, what our questions are, where we think we might see an opportunity for potential priority products.

And so, before -- the main take home is before we actually announce another product, we would be having some engagement with stakeholders.

So, to kind of support this process, in tandem with this process we've developed some templates. We've developed some guidance for the team members to use, to help them sort of be consistent in their approach and make sure that we summarize our data well. So, we've built a whole slew of new tools.

Here are a couple of them. The one on the sort of right side of the screen, Chemical Scoping Log, is just essentially a template for recording information on a chemical that we've identified as interesting. And so, we're trying to identify information about its hazard traits, uses, things like that. And I'll talk a little bit about the context in which we would use that tool.

The Green Matrix, we call it the Green Matrix, actually that's what we call it, is for reporting, sort of summarizing the information on the Chemical Scoping Logs. And we use that as part of our prioritization for deciding what chemicals we'd like to continue to pursue.

So, what we've done within the Chemical and Product Evaluation Team is we've assigned team members to

sort of a small scoping team. Each of the scoping teams is centered around one of the product categories in the work plan.

And within each scoping team we've asked each person to sort of look at that category through the lens of the policy priority. Whether it is based on roots of exposure, or based on workers, or based on water, aquatic impacts, each team member is sort of looking within that category for chemicals that are important to that policy priority.

And we didn't dictate how they were going to attack that task, just gave them the general framework. And we tried to sort of have a diverse group of people on each of these scoping teams. Obviously, they're not a large group of people, but we did do that as well or we have done that.

And so, really, it's focused on chemicals. Clearly, you have to be thinking about products even from the outset because that's the kind of a constraint that each team's working under. That's the same slide, actually.

So, we've actually had some interesting recommendations of chemicals, looked through several dozen chemicals within those product categories laid out in the work plan. And we're going to continue sort of looking into the product categories and trying to see how we might --

where we might focus our energies based on the chemicals that we've prioritized.

So, we've narrowed, we've got it prioritized. We've got a list of chemicals that we think are promising. We're looking at the product categories, identifying, potentially, subcategories of products or maybe chemicals that cut across product categories. And those kinds of findings will inform the public engagement that I mentioned.

So, the challenges that we had in the first round of product selection continue in some cases. The Candidate Chemicals List is a compilation of 23 authoritative lists. They are created for various purposes. Sometimes, certain chemicals that are members of class, which I'll talk about later, are on the list and others aren't.

Obviously, also, we've got a pretty ambitious work plan with seven product categories, several of which are extremely broad. And while we do have some excellent people, you know, we do have some constraints on our expertise.

We do encounter data gaps, both for the hazard traits of some of our candidate chemicals and in understanding current product ingredient data.

And then, a lot of times the chemicals that have pretty strong hazard trait data, that we're sort of interested in pursuing, are present at low levels in the

products within the categories. So, that's kind of a challenge is understanding whether we can really meet the criteria in the regulation for significant or widespread adverse impacts, potential to contribute to or cause significant or widespread adverse impacts.

So, I won't go over these questions, now. In general, when we get to the clarifying questions, I can sort of flesh out anything that's not -- that doesn't make sense. And then, we would just like your feedback on what you've heard and how we're describing our process.

And so, I talked to Meredith and the Chairs, and I'm just going to go on to the second topic, and I guess we'll have the clarifying questions, and the public comment, and all that afterwards.

So, the second topic, which is really on our minds around product selection, is around chemical groups. If you look at the Priority Product Work Plan, for each category that we name in there, we provide examples of some of the candidate chemicals that are found in products within each of those categories.

And in many cases, the examples are actually chemical groups. And some of those examples we give in the work plan are groups around sort of structural feature, like sort of brominated diphenyl ethers, in the picture. Others, there are, of course, other ways of grouping chemicals, and

including by hazard trait, or exposure potential, or others.

Here are some of the chemicals that we sort of list. And fragrance is one of the example we give, for example.

So, by listing these types of examples, we've already elicited some interest from some of our stakeholders and we've had some conversations with people who sort of have explained, for example fluorochemicals, to us a little bit. But a lot of these groups are really quite complex, and not always are they all candidate chemicals.

So, in looking at chemical groupings, they can be helpful in a number of ways in our process. So, as we're going -- looking, first, at the candidate chemicals that are used in products within our work plan categories, and then trying to narrow down the product categories to them, ultimately, select specific products, we can sort of understand that maybe a class of chemicals is used in one of the categories and it can help -- we can sort of look at it sort of in aggregate, and decide if it's interesting and compelling.

Also, chemical groups, as we kind of talked about and heard yesterday, come into play in alternatives analysis. Sometimes the chemical groups that are sort of oriented around chemical structure and function really line up. Other times, they can be quite sort of heterogeneous

groups of chemicals that have the same sort of function, but it can be sort of a blurry line.

So, on our Candidate Chemicals list we have, in some cases some of the authoritative bodies have listed a group. And so the group, itself, is a candidate chemical. However, we need to be sort of specific about, in our product profile, what the hazard traits of the chemical are. And so, sometimes, trying to extrapolate from the whole group to an individual member can be problematic.

So, in these groupings that we've listed, like for fluorochemicals, that's a complicated class. Some of the newer, shorter chain perfluorochemicals are not candidate chemicals, and are not on the Candidate Chemicals List. So, while we mention it in the work plan, we're actually somewhat limited in the choices we have from which to choose.

So, this was an interesting point that was gleaned. Basically, this slide was we had a webinar on Monday, with Ann Blake and Joel Tickner, and we learned a little bit about chemical functional groupings. I'm sorry, bear with me just a second.

There are different ways of thinking about the functional groups of chemicals. Sorry, I got a little lost on my slides here. Here we go.

So, here are some of the challenges we face as we

go through our product research in trying to identify priority products. We've got these groups of chemicals. Some of them are candidate chemicals, some of them aren't, some of them are functional categories that overlap with structural categories.

So, when we are thinking about alternatives to flame retardants, for example, we want to understand the different structural -- I'm sorry, I'm getting a little flustered here.

So, I'll just kind of move on to the questions. We have a number of sort of discussion questions. They're in the materials that were distributed yesterday. And we're just interested in your feedback on how we might look at chemical groupings and classes, how they can inform our decision making as we identify product chemical combinations, whether you have some examples that might be informative to us. How the different ways of grouping chemicals can inform us. Tools we might use. Strengths and weaknesses of the different approaches to grouping chemicals. Other ways that chemicals might be grouped. And how uncertainties -- these ones are sort of related to using groups in AA.

So, apologize for the disjointed presentation. Those are our -- so, that's sort of our two topics. And I will hand it back to the Chair, thanks.

PANEL CO-CHAIR FONG: Andre, thank you very much. That was just an excellent presentation and summary of the activities that the Chemical and Product Evaluation Team has been doing.

So, at this point I'm going to ask the Panel members if they have clarifying questions for Andre and his team? I see Helen.

PANEL MEMBER HOLDER: Hi. I'd like to go back to the first presentation. I had a question about the point in the process where impact -- the criterion about the widespread impact.

It sounded like it actually comes fairly late in the process, after the chemicals and product groups have been sort of roughly scoped out. I just wanted to confirm that that's where it happens in the process or if it's earlier than that.

MR. ALGAZI: Okay. Right, on this, this one's the one you have to eat. So, the key prioritization principles in Article 3 of the regulations are that the chemical must have one or more of the hazard traits that are spelled out in the OEHHA regulations, in Chapter 54. And that there must be potential exposure to the chemical in the product and that that exposure must have the potential to contribute to or cause significant or widespread adverse impacts.

So, to get to that point, really, early on when

we're screening the chemicals, we're focused on establishing the first part of that criterion, which is the hazard traits. As we sort of get more specific and we start thinking about subcategories of products or specific products, then the potential for adverse impacts becomes sort of more relevant.

So, it is -- that's sort of a correct observation, I would say.

PANEL MEMBER HOLDER: Can you then expand a bit on how are you doing -- how are you assessing that widespread impact, meeting that criterion?

MR. ALGAZI: Well, it's sort of described in the regulations, sort of in a narrative way. And it contributes to or causes, so it's kind of a qualitative thing. I don't think -- we don't have a formula for determining that something is above a threshold for widespread impact or below, or significant impact.

So, especially in the first round of products we chose things where we thought the significance or widespreadness of the impacts were fairly self-evident. We really haven't got to the point, yet, where we've been looking at something where it was sort of gray in our mind, or it would be to our stakeholders potentially unclear.

I think, I don't know if I can really answer how we do that.

PANEL MEMBER HOLDER: I think that my observation and recommendation would be that might be something that could get just a little bit fleshed out just a little bit better. So, it's really -- I mean, maybe like you said, the first ones may be more self-evidence, but over time that may or may not be the case.

Or, if you're doing something ecological, there may be just a need to be a little more specific about tying it to that impact.

MR. ALGAZI: Thank you.

PANEL MEMBER CARINGELLO: Again, thank you for the presentation. That was very helpful.

I wanted to tease a little bit at the product ingredient request, and how to get that data for you. And the question is does either the act or the regulation allow you, in some way, to request that of industry? Does it give you that broad power to say, you know, feed us this information or are you having to look at it through a series of voluntary sources for the information?

MR. ALGAZI: We've compiled a listing of sources of product ingredient data. Some of it is more recent than other. We do have some authority to ask people for data. However, before we start fishing, I think we need to sort of have -- really, where we are in the product category scoping right now is it's not yet possible to really have a

targeted, focused request for ingredient data. Some of the questions we have are pretty general. Is chemical X still used in, you know, skin care product or something?

And that's where it can be challenging because some of the data sets that are publicly available, that we have access to, are based on MSDS data from maybe five, ten or more years ago. So, sometimes it's just -- it's early, early days to be doing a call in, say, and asking industry to tell us, you know, do you use this chemical or what are all your ingredients, or something like that.

PANEL CO-CHAIR FONG: Meredith, you have a -- yes.

DEPUTY DIRECTOR WILLIAMS: So, we have the authority to do data call ins and to request that the information come in. However, we can't compel it. And what happens if someone doesn't volunteer is that we can publicly state who shared information with us and who didn't. But there's nothing that's particularly enforceable beyond that, in terms of compelling data.

MR. ALGAZI: I should say, we have had people provide data in the case of the first priority products about the use of chemicals, so just voluntarily.

PANEL MEMBER CARINGELLO: And part of why I was asking is there are other agencies even in the State, like CARB just did their survey that required companies, kind of across the board, to divulge entire formulations to them.

And I just wasn't sure if you could somehow mine that data or if there was kind of a wall between the two agencies.

And there are other things, you know, EPA, with the new CDR Program, is going to have similar information that you might potentially be able to mine. I just didn't know how well you could access that.

MR. ALGAZI: We have had conversations with the Air Resources Board about that data. And I don't know, Eileen, do you recall? Like, can we get aggregated data but not -- we can't -- you know, some of that is obviously trade secret and things like that, so they wouldn't disclose, necessarily -- or they wouldn't disclose an individual product's ingredients in their entirety, but maybe aggregated. Is that accurate?

DEPUTY DIRECTOR WILLIAMS: And the other database I'd like to mention is the Safe Cosmetics database, for California. Companies are required to disclose that and we are already trying to figure out better ways to mine that data.

PANEL CO-CHAIR FONG: I have Cal, next.

PANEL MEMBER BAIER-ANDERSON: Okay, I have an easy question. Have you or can you make available the blank templates you've developed to organize and analyze the information? Good templates are hard to find and when a

good organizing template is available, you know, I think that could also help kind of promote harmonization of thinking on this.

MR. ALGAZI: So, I see some nodding coming from Karl and Meredith. So, yeah, we can share those.

PANEL CO-CHAIR FONG: Well, let me just ask a follow-up question. So, on the populated templates, is that just for internal use, only, or would that be available to the public?

MR. ALGAZI: Well, currently, it's for internal use. It's kind of a deliberative document at the moment. It will be, I presume, a public document at some point. I don't know, is it always going to be deliberative? Not necessarily, no.

MR. PALMER: All of the team's deliberations are not public, now. What will come out of the team, when we start making decisions, is development of supporting documentation, which all will be public. Both, first in the case of rulemaking, when we provide technical documents it will be based on this research. But the deliberative documents will not be available.

DEPUTY DIRECTOR WILLIAMS: And just to augment, the idea is to capture the information as we go so that we can build the documents that will support our decision in a consistent way, across different staff members, and across

different policy priorities.

PANEL CO-CHAIR FONG: Thank you very much for that clarification.

I have Meg, next.

PANEL MEMBER SCHWARZMAN: This is just a very brief question. I was wondering if you could return to the slide where you showed a couple of different understanding -- or not understandings, but a couple different uses of the word "function".

MR. ALGAZI: Sure.

PANEL MEMBER SCHWARZMAN: And there's the chemical function, and the end-use function, and there was a third that I can't remember.

MR. ALGAZI: And that was borrowed directly from the paper that Ann and Joel Tickner, and a number of other authors worked on. Did I pass it? It was a very -- the paper was very interesting and relevant, and as was the webinar on Monday that we had with them.

I'm sorry, I'll find it. Lots of questions. I'm getting there. There we go. So, there's sort of three levels of thinking about alternative chemical groups.

PANEL MEMBER SCHWARZMAN: I just thought that would be helpful to have up as we're talking about function.

PANEL CO-CHAIR FONG: Good suggestion.

I have Ann Blake, next.

PANEL MEMBER BLAKE: Thanks, Meg. Meg actually led into my question. There was a lot of good information on those slides. And since we were all caught in the middle of thinking of stuff halfway, yesterday, we're going to put you on the spot to do the same thing.

So, I know you're still thinking early days about function. But if you could just flip through the rest of those slides, Andre?

MR. ALGAZI: Going down or up?

PANEL MEMBER BLAKE: Down, just all the function ones that you kind of cruised by.

MR. ALGAZI: Yes.

PANEL MEMBER BLAKE: Back one.

MR. ALGAZI: Back one. Here we go.

PANEL MEMBER BLAKE: Was there one more before that?

MR. ALGAZI: I think I'm clicking the wrong direction, I'm sorry. I have a Mac at home and this is backwards.

PANEL MEMBER BLAKE: Yeah, so if you go -- oops.

MR. ALGAZI: Okay, here we go, this is the first one.

PANEL MEMBER BLAKE: Keep going. Would you like me to --

MR. ALGAZI: Okay, so there are some groupings

that we identified in the work plan.

PANEL MEMBER BLAKE: Right. I think we went kind of quickly through how you're thinking about function or potentially thinking about function in terms of grouping. And it would be helpful for us to look through this so that we can provide useful comments.

MR. ALGAZI: Of course.

PANEL MEMBER BLAKE: So, it was right after the two levels of function. Three levels of function, rather.

MR. ALGAZI: Okay, I'm going the correct direction, now.

PANEL MEMBER BLAKE: Right there, yeah. So, can you talk us through that a little bit? I'll give you a second shot at it.

MR. ALGAZI: Sure. So, as you talked about in the webinar, on Monday, some of the classes of groupings of chemicals -- well, I'm trying to think of an example. Well, in paint stripping, for example, we've learned that there are a number of ways of removing paint from a substrate. And some of them are sort of structurally related, there are organic solvents that will all sort of do the job. There are chlorinated solvents, like methylene chloride. There are sort of non-organic sort of ways of -- let's see, what it is, there's benzyl alcohol. There's physical methods.

So, in the case of if you were looking at a

function of chemicals that remove paint, we have a number of sort of structurally related chemicals within the group, and then some that are kind of different. So, that's one example.

When we were identifying paint strippers with methylene chloride, in the first round of product scoping, we were aware that N-methyl-pyrrolidone also had significant hazard traits, but it wasn't on the list of chemicals that we were authorized to name as chemicals of concern during that first round. We had a limited list of chemicals. So, that's another member of the functional class that we weren't able to identify in the first round of product selection.

So, we want to be thinking about the whole suite of alternatives when we're naming a priority product so that we, one, if there are chemicals of concern within that group that we think about them sort of together. And that we potentially know -- so, we might want to name more than one chemical, potentially, it could be.

Also, if we have some within a functional class that are candidate chemicals and others that are not, then we are sort of thinking of what alternative somebody might select. And the fact that something isn't a candidate chemical, we don't assume that it has no hazard traits because the lists, inherently, aren't -- are sort of there

are new things being developed, but haven't been listed, or the ones we've incorporated may not necessarily capture some of the chemicals that are in the functional class, that do have hazard traits.

PANEL MEMBER BLAKE: So, if I can build off on an earlier slide, and we don't need to go back to it. You said that often a structural grouping was helpful and this is where structure and function kind of come together. Structural group was helpful because the hazard was associated particularly with the structural functionality.

MR. ALGAZI: Correct.

PANEL MEMBER BLAKE: And when you look at function, that may or may not be true.

MR. ALGAZI: This is true.

PANEL MEMBER BLAKE: And so you have to think more broadly. Function makes you think about hazard traits and structures that may or may not be related to the one you're trying to regulate.

MR. ALGAZI: Well put, thank you.

PANEL MEMBER BLAKE: Okay.

PANEL CO-CHAIR FONG: Andre, excellent choice in terms of using the Mac as your preferred computer.

(Laughter)

PANEL CO-CHAIR FONG: Okay, Geiser next.

PANEL MEMBER BLAKE: The good result of an

alternatives assessment there.

PANEL MEMBER GEISER: So, that was the second advertisement that I think we've had in the past two days, right.

So, I don't know, I'm trying to figure out how to be helpful here, Andre. I think what I have to say is completely obvious, but let me -- seeing as you asked this question, kind of where is it useful to think about what kinds of groupings and I'll just say my thoughts on it. Which is that sort of the list-based approach to building the list, which is derived from lists of hazard traits, or hazard whatever, is kind of grouping chemicals by kind of exposure potential or, more to the point, about hazard, itself.

MR. ALGAZI: Right.

PANEL MEMBER GEISER: So, it's really about the end points. You know, carcinogens, or reproductive hazards, or whatever. So, you've already used that format for grouping chemicals.

It seems to me, in disaggregating that list, into trying to sort through it and find priorities, again it seems to me that the end point, whether it's a well-recognize carcinogen, whether it's whatever is an important part of that.

The structural stuff, it seems to me is important

because it is a screening thing in my mind, because if one chemical acts one way, you might look at the others that are in that structural relationship, or similar structures to see if they do the same thing. But it's the structural -- it isn't so much that structure matters there, as it's a cue to telling you that maybe a whole bunch of things that are structured that way are going to behave the same way. Because actually, in a way, we don't really hear about the structure. We care about the performance, what actually happens when that chemical -- when someone is exposed to it or the environment is exposed to it.

So, it's more -- it's not -- it's more in my mind, again, more about the end point or what it causes, what happens.

When you get over into alternative assessment, that's where function becomes really important. And it becomes really important because, one, is it opens up an avenue -- opens up many avenues, looking at many different chemicals, wholly different chemicals, and even non-chemicals as a way to think about alternatives.

And if you just hold the function sort of solid and then look at the design space and sort of say, okay, what could help do this job staying at that level or even changing level in the decision making process, such that you get bigger, such as, well, do we really need this thing, or

do we -- is there some other way to get the purpose out of it, not just the function out of it, then all of that tells you that a functional analysis is important.

The other reason I would say is because too often I've seen alternatives assessments where -- that's not the right word. Too often I've seen situations in which there's this, what I call, derivatization hunting, is you basically -- you know of a chemical you don't want, and you're just trying to do a little bit of a shift in the structure to see if you can find something that is going to be different enough from that, that you can call it an alternative.

But the problem with that is, as we know, is a lot of those things are only mildly different in terms of their end point, as well. And also, I'm always promoting functional thinking when I'm thinking about alternatives because I think it opens up the space a lot, you know, in terms of how I think. That's all obvious, but I just wanted to offer it.

PANEL CO-CHAIR FONG: Actually, before answering that, why don't we save that for the discussion part of our -- yes.

So, just a gentle reminder to the Panel members, this is clarifying questions for what Andre presented to us a little bit earlier today.

Helen.

PANEL MEMBER HOLDER: So, I had a question about how you're going to handle or how you're handling the non-listed chemicals that are of interest. So, since they can't actually enter the formal process, since they're not on the list, what is the intention? Is that note it in the -- or put it in the notice, or how are you going to handle that in terms of letting people know that these other chemicals are under scrutiny, or of interest, or whatever?

MR. ALGAZI: So, currently, within my team we've asked people to kind of start a list, sort of running list of chemicals that they encounter during their scoping research, that aren't candidate chemicals, that are potentially of interest.

And so, we haven't really -- I don't think we have any specific -- Meredith, can we say anything about that? I mean, we kind of are watching what's going on. Our lists are dynamic, they're changing quite a bit.

The Science Guidance Panel for Biomonitoring in California is meeting next week, and they may make -- vote to change the status of PFAS from a designated chemical to priority chemicals, which would make the class of candidate chemicals.

So, we sometimes are just sort of watching and seeing what's going on, keeping abreast of things. What else can we say about that?

DEPUTY DIRECTOR WILLIAMS: Well, I wanted to clarify your question, which is -- is the basis of your question about the NMP? Is that why you asked? Because the first three products were so different in terms of, you know, only 150 or so chemicals, as opposed to now, where we have the full list.

PANEL MEMBER HOLDER: It was more in the case of say you are interested in a chemical within a class, and that one chemical or some related chemicals are in the candidate list, but then there are some other variations that are not in the candidate list. The question is sort of how are you going to handle those other, non-candidate list chemicals that are still of interest? How are you going to communicate that? Or are you going to communicate that out? Is that in the notice or how do you share that?

Like, I'm thinking, for example, phthalates, rights, so there's lots of phthalates and not every single phthalate is listed. But if you were going to look at them, you would probably want to look at a wide range of them. So, how would you communicate that?

MR. PALMER: Helen, I think there's a couple of issues there. One is that for the process of picking a product, we're going to weigh that. Because our intent is not to identify a priority product that we think might push people to a potential regrettable substitute.

So, that would be a weighting factor in our decision making about what we would pick. Because if we cannot get to, if you will, we can't capture chemicals of concern because they're not available on our list, we would certainly consider not listing that if we were afraid that we might push people that direction.

The other aspect of it is that there is -- these lists are constantly changing. And we would also, I would note, have the authority, our own authority to bring chemicals into the list through rulemaking. And also, there is the petition process which allows anyone, essentially, to come and give us data to suggest that we might expand those lists for some of those chemicals that aren't within the current list.

So, there's sort of two things going on. One is in our selection process, obviously, when we go out with a priority product we're going to put all the data out there that we have and we would identify, if we knew that there were chemicals that are related, but not on the list, but that would be part of the alternatives analysis process. I'm not sure that's --

MR. ALGAZI: And we might talk about some things at, say, a workshop, if we were looking at a class of chemicals and we found some that were, we might -- that might be an interesting topic for a discussion at a public

workshop.

PANEL MEMBER HOLDER: I would just encourage that you continue to be able to take in all the family members, even if they're not listed. Because exactly what you're saying is that that sets up the probability of regrettable substitutions. I mean, that's literally how we got into this mess in a lot of these cases. And so, we don't want to have the fact that it's not -- that a related chemical is not listed stop us from looking at anything, right. But we still need to let people know that they can't just move that functional group down and everything's good.

PANEL CO-CHAIR FONG: Let's finish up the clarifying questions with Ken and Meg.

PANEL MEMBER ZARKER: Yes, just briefly. I was just curious, you know, yesterday we were talking about alternatives analysis process and today we're talking about the adoption of priority products.

How do you see the timing and meshing of that, synchronizing that with the schedule and kind of where you see that framework?

MR. ALGAZI: Well, once we formally adopt a candidate chemical, add to the list through finalizing a regulation, then it is linked directly to some time frames built into Article 5 for alternatives analysis.

So, for the first three products, given that we're

still working on public notice documents, there isn't really, yet -- the clock hasn't started for it. But there's a -- I think, the first thing that happens, after we adopt the regulation, is that the responsible entity has to submit a notification to us in 60 -- is it 60 days after? And then, there are a number of other time frames built in, with possible extensions.

So, there definitely is a connection between the two. So, as we get going, we'll have -- as we continue additional cycles of adding priority products, new alternatives analyses will be coming in and so there will be a lot of things happening at any given time.

PANEL CO-CHAIR FONG: Meg.

PANEL MEMBER SCHWARZMAN: I was just going to add, briefly to this conversation, about families and functional groups being named together. As I know some of the people in the room are aware, and Andre mentioned this, about the Biomonitoring California changing its listing, it's increasingly listing functional groups and families of compounds.

And I sit on the Scientific Guidance Panel for the Biomonitoring Program. And on the last meeting, we named orthophthalates, actually, as a group. So some of that, then, feeds directly into this process.

MR. ALGAZI: Yes.

PANEL MEMBER SCHWARZMAN: So, you know, these are parallel processes that are starting to change, that are being helpful. I mean, it's not for all classes of chemicals, so it doesn't solve all the problems. But in some ways, this process is being helped by that process.

PANEL CO-CHAIR FONG: I don't see any more name tags up. We'll go on to the next topic.

But before we go into the Panel discussion on the Chemical and Products Evaluation Team's questions on process and lessons learned, and chemical grouping, at this point we will take public comments.

And just another reminder that the Panel's not able to respond to comments or answers -- or answer any questions because this is a working meeting.

If there are webinar participants who would like to make comments on today's meeting, please type your comments and they will be read to the Panel after we take comments from the people present here, today.

The first one I have is from Mr. Will Lorenz.

MR. LORENZ: Hello again, Panel.

PANEL CO-CHAIR FONG: Will, would you mind introducing yourself, please?

MR. LORENZ: Yes, Will Lorenz, with General Coatings. I guess my question about this future process is, you know, you start off with identifying chemicals, and then

you're trying to establish whether there's really harm to a significant and widespread standard. It seems to me that that should be the opposite. That the standard should be identifying things that are significant and widespread so that you're not wasting, basically, everybody's money, and you're solving real issues, and helping the general public. And you're going after things of which should be of great concern.

Or, you know, you should be looking at things that are based upon green science, that are based upon having things that are readily available out there, that are alternatives, and engaging industry to try and see if those are viable solutions.

The idea of starting with chemicals and then trying to get down to see if it meets a bar of whether or not we should go after it, really puts you in trying to create a standard of whether it's guilty or not. And I disagree with that. Thank you.

PANEL CO-CHAIR FONG: Thank you, Will.

The next commenter is Veena Singla, from the Natural Resources Defense Council.

MS. SINGLA: Good morning, thank you, Veena Singla, Staff Scientist with the Natural Resources Defense Council.

And my comment is actually related to the agenda

topics from yesterday, so I hope you'll humor me because it was such a rich and interesting discussion. And I just wanted to reflect back a little bit of my thoughts on that conversation.

You know, there was a lot of discussion about the details of alternative analysis and the challenges. And, you know, I was really thinking about the bigger picture and what's at stake here with alternative analysis because it is -- it's so important.

And as something that I think is an example of how important this is, is a paper that came out just the beginning of this week, which found that little babies, these are two months to one-and-a-half-year old babies, had evidence of high exposures to the toxic flame retardant chemical, chlorinated tris, in their bodies. Substantially higher levels than adults. And babies that had a lot of baby products in their homes or that attended daycare, had significantly higher levels, about seven times higher than babies that didn't.

And I think we can all agree that this is not a desirable situation where these young, vulnerable infants have high exposures to a cancer-causing chemical.

And in my expert judgment, I think it's appalling. And why, you know, why are we in this situation? And, you know, as we heard yesterday, these considerations for human

health have really not been a standard and systematic part of the decision-making process when we're thinking about chemicals that go into products. And what that leads to is unacceptable results, like what we see with these babies and the toxic flame retardant chemicals.

So, that's really why we're all here because, as a society, we do value public health. And now, what we're trying to figure out how to do is explicitly value it in this alternatives analysis process.

So, will there be tradeoffs? Yes, there will. You know, as a small child my mom always told me, Veena, in life there is no such thing as a free lunch. And I never quite knew what she was talking about, but I understand it now.

And so, there aren't going to be perfect alternatives. No, there won't. But I really do believe that there are better alternatives. And we have to figure out how to get there.

So, I don't have the answer, but I will say that when you ask these questions about valuing health, the answer you get is going to depend on who you're asking. So, a product manufacturer that has to think about their bottom line, or a cancer survivor, or a mom who's kid has asthma. Because if we go through this alternatives analysis process and think about all the relevant factors, and all the

details, and we're not appropriately valuing public health, then I'm really afraid that we'll come out with another regrettable substitution, and then we've really failed at what we set out to do.

So, I would just ask that when you're considering these questions that you remember who's not at the table, and that we -- how important it is to really protect the most vulnerable and highly impacted amongst us. Thank you.

PANEL CO-CHAIR FONG: Thank you.

Nathan, are there any more comment cards at this point?

MR. SCHUMACHER: Anybody else in the audience like to comment? I guess not.

PANEL CO-CHAIR FONG: If not, let me check with the audience on the webcast. I'm not seeing any more requests for making comments. I will close this particular public comment session.

And by a show of hands, should we take a break now? That sounds great. In that case, let's take a seven and a half minute break and reconvene at 10:15. And we'll start the Panel discussion on the Chemical and Products Evaluation Team's topics. Thank you.

(Off the record at 10:09 a.m.)

(On the record at 10:18 a.m.)

PANEL CO-CHAIR FONG: Calling the meeting back to

order.

So, the first topic for Panel discussion this morning is on the Chemical and Product Evaluation Team's process and lessons learned. And I've asked Karl to put the key questions that they were interested in members providing input on, back up on the monitors.

So, the three questions or areas of particular interest, it's one, about the adequacy of the tools that Andre walked us through today.

The second question, it's related to the challenges, specifically on data gaps, limitations on the CC list, and product ingredient data.

And the third question, it's related to areas of expertise in which DTSC might be looking for help on.

So, let's open up the discussion. I have Helen.

PANEL MEMBER HOLDER: So, I did want to come back to the tools and sort of the ordering of that process. And come back to this sort of -- this impact and how that's factoring in the widespread impact criterion.

And so, I kind of had a suggestion with respect to that, which is maybe one way of kind of working this would be to work it from both ends simultaneously, so that you've got an epidemiologist, or somebody in there kind of working it from the impact side simultaneously, so that you're not waiting until the end.

So, I don't -- I think you need to develop that maybe just a bit more. And I know that was top of mind for these first -- the first combinations because we wanted to have support for it, public support. But I do think it needs to be part of, baked into the process so that we're -- again, I mean, you know, as we've heard, you want to work on the things that matter. And I know we all want to do that. So, how do we do that in a more structured way? It's very hard.

The epidemiology side of this and tying an exposure to, in effect we all know is very hard, but somehow should be incorporated.

PANEL CO-CHAIR FONG: Daphne, you had a response to that?

MS. MOLIN: Yeah. Sorry, this is kind of loud. So, in our prioritization process, as Andre described, we have about six steps. And in that we start pretty general with a chemical, but we're always keeping that end point in mind -- not end point. That end result in mind for the significant or widespread.

So, what we're doing, as Karl always says, it's a very iterative process. So, as we start general, we think about that end point and we kind of drill down, we zoom back out, we zoom back in. And by the end of it, we're at something pretty specific.

So, even in the early stages it is something that we're keeping in mind.

PANEL CO-CHAIR FONG: Meredith.

DEPUTY DIRECTOR WILLIAMS: So, I think although it sounds -- one of the things that may have not been appreciated on the slides was that different people took different approaches. So, it's not that somebody took a chemical and just investigated that chemical. Some people went to product ingredient databases to see how many product categories, for instance in CPCAT, used a particular chemical.

And so, if you find a chemical that, you know, is used in 20 different product categories, it gives you a sense that there is a potential large impact from that chemical because it's being used so widely.

And this addresses, to some degree, the comment from Will Lorenz about the need to look at things multiple ways.

So, we focus on the chemical but, you know, we're doing it in a number of different ways. And the other thing I'll say is we are still learning. So, if that turns out to be a fruitful method, we may do that more consistently.

Right now, we're casting a wide net in terms of the approaches and some of the toxicologists use more traditional toxicology approaches, and some -- you know, and

we're trying out these different tools to see what works, what's efficient for our resources, and what leads us to the impactful chemicals and products.

PANEL CO-CHAIR FONG: Eileen, do you have a follow up on that?

MS. SHEEHAN: Yes, I would add, to reinforce what both Daphne and Meredith said, at each stage, and it's reflected in the templates that we refer to, there's -- we are seeking indicators of significant or widespread adverse impacts. Whether it's volumes, in chemical volumes, presence or the quantity, or amount, or the presence of the chemical in the product. We also look for indicators in the California biomonitoring, and in N-HANES, trying to identify presence of the chemical and its exposure. These are all indicators, various indicators of either significant or widespread adverse impact.

And there are a number of sources of data that we're not even touching on. I mean, you can look at Poison Control data. There are a number of circuits for that, that indicate that. And we are capturing them, not at the end, but from the initial chemical scoping into product scoping, and throughout the process.

PANEL CO-CHAIR FONG: Thank you. Before I go to Kelly, are there any more questions related to the ongoing discussion theme before I -- then Kelly.

PANEL CO-CHAIR MORAN: Thank you, Art. And I appreciate you doing that because I am going to take the discussion a little different direction.

I've been trying to think about how to provide constructive input on these questions, and I thought maybe it would be helpful to just walk through my experience in trying to prioritize chemicals.

I do a lot of this. This is a big part of my professional work. It's mostly for pesticides, so it's a little more organized class of chemicals. We know some things there, we don't know about other things. But I've also done it for some other traditional pollutants.

And there are three things when trying to establish priorities that have floated to the surface. I've worked on a whole lot of prioritization schemes. Various agencies want to approach prioritization in different ways, so we've done a lot of thinking through how to do this.

And one important background is that there's really no nice, numeric formula to come up with. Because everybody knows this, we've advised on that before. So, I just want to reiterate that, everybody shake their heads.

So, the first one, the first theme is the use of monitoring data to identify that there's a chemical appearing in some medium, in my case that's mostly water, at a concentration that is close to or sometimes exceeding a

concentration that has been reported from some other piece of literature to be harmful to, say, aquatic organisms. And so, in my case, I'll just use a lot of water examples here. So, I'll be talking about concentration found in water, concentration in some other study that might be obscure, and probably not related to the monitoring data that says this concentration, you know, maybe it's harmful or maybe it's close to being harmful. So, that causes one to want to pay attention to it.

And then the next step after that is to do a source identification study. That is something that's not here. It takes a lot of resources to do that kind of thing. And the techniques are not well-established in the literature. I've found that an awful lot of people who claim they're identifying sources of pollutants have no idea what they're talking about. This is the biggest bag they saw in the hardware store. Their friend's kid used that. And so, they put it in the summary of their scientific paper that gets published in the SNT, that says this. So, there's a whole lot of misinformation out there, on this topic.

So, I've been working on developing techniques just for water, so for wastewater and storm water, and trying to say how can we at least get started on that. What are the steps towards giving us a more scientific understanding of at least the difference between big and

small.

And my experience in those arenas is that it's usually possible to sort big and small with data that are available about products. Sometimes it's not, but then you can at least hone down on what are the questions, which groups of products commonly contain this chemical about which we lack sufficient information about the amount in the chemical, or about some pathway that's super important. And we can hone that down to a few scientific questions.

This kind of line of work is something that requires a budget, research, those kinds of things, so it's not something I would be suggestion the Department staff, themselves take on. But it does strike me as a gap in this process, that there's a gap between those agencies who are collecting monitoring data and DTSC that's trying to identify specific products. And that gap is this source identification study work, which my experience is pointing me at thinking that this is something that really needs to be tackled by researchers, you know, university kind of folks. That this gap is something that we're going to have to address as a society.

And that links to the exposure piece that we've been talking about, so Cal's been talking about that.

So, that's number one, monitoring data and trying to do source ID, sometimes easier than others.

The second one is something about how -- so, you have a chemical that's used in a certain way, that is known to be a source of exposure. So, it's used in a way that's dispersive, or used in a way where there's a high level of exposure to humans. Or, in my case, aquatic environment.

And so that, alone, is not enough. You also need to have toxicity data to say this chemical is very toxic at fairly low concentration. So, those things float to the top.

In my experience, that's something that's toxic in the nanogram, or tens of nanogram per liter concentration levels. Those chemicals, used in a manner that have a direct pathway to water, are almost every time associated with water pollution. So, we just see that over and over again, so it's like you get the flags.

When that happens, then the missing piece, if you really wanted to make that link, is having some monitoring data. And how far you need to go on that is, I think it would be a question for the Department, for its decision making.

Most of the time, in my work, when that use pattern plus -- equals exposure, plus the very high toxicity, that tends to trigger a request to -- or a recommendation that I make to all kinds of agencies and partners to do monitoring.

And I'm finding in my work, when I am representing government agencies, I go out to scientists and agencies and say, hey, here is this particular chemical that could appear in this medium in concentrations that might be interesting. I'm surprised at how many people pick that up and do the monitoring.

And so, just DTSC asking the question, if it's specific enough, could potentially generate the gap in that information that could support a decision yes or no, and proceeding.

The third trigger is something that's already regulated because of their exceedance of some standard. So, in the water case, that's the 303(d) listing. So, we've got a 303(d) listing, or a TMDL, we've got something that shows an exceedance of a standard. And then all we'd need to do is look for the chemical and the pathway to say that we need to be thinking about whether that's big or small.

So, those are three ways. Ultimately, I think, when you're thinking about this -- so, all of this has an exposure link. And there, I just recommend that instead of trying to look at everything in the universe and every pathway, that you focus on a particular medium, end point.

So, my examples would be sewage sludge, sewage effluent, municipal compost, indoor air, wastewater at -- I already said that -- urban runoff. But some specific

medium. Not trying to do everything.

And then the last thing I'll say is that the only people I know who have tried to do any kind of prioritization process quantitatively, and had some success, is Department of Pesticide Regulations. And I know you've already talked to them, but they have been trying to develop simplified tools, based on limited data, to help them make some decisions about priorities in terms of regulation and registration decisions, and also in terms of monitoring.

And thanks, and sorry for talking for so long.

PANEL CO-CHAIR FONG: Thanks, Kelly.

I understand that Panel Member Bill Carroll is now joining us via webcast and by phone. Bill, are you on?

PANEL MEMBER CARROLL: Yeah, I'm here, Art, thanks very much. And I'm sorry to have missed up to this point, but I had other things.

So, I'm pretty much going to work here and at least try to pick up on what's going on. And I'll send a note to Corey if I need to intervene.

PANEL CO-CHAIR FONG: Okay, great. Thanks very much.

DEPUTY DIRECTOR WILLIAMS: So, just on the source identification, I just wanted to let people know we are in conversation with the Water Board. The Water Board has kicked off a stormwater strategic initiative. And within

that they have prioritized true source identification as one of the projects they'll be taking on. And they very much appreciate the opportunity of safer consumer products to take action based on what they find through true source identification. And so having that connection, I think, could be very valuable.

PANEL CO-CHAIR FONG: Ann.

PANEL MEMBER BLAKE: So, I'm going to build off a little bit of what Kelly said, Kelly's experience with water pollution. I'm trying to think through how useful this might be and whether it translates to you or not.

But having worked with several large retailers, who are dealing with, you know, 100,000 products or a million products, and coming to us and saying, you know, what are the top ten chemicals we need to be concerned about? To which we say, well, it depends on how much time you have, which I think you're familiar with.

So, for what it's worth, these are the approaches we have attempted with several different groups of people with large numbers of products and chemicals. One, you've already got covered, which was we start with the regulatory lists, which Kelly also referred to as the 303(d) listing.

And then, a subpart of that is end point classes. So, the CMRs, PVTs, disrupting chemicals, that's sort of our shorthand for all of that.

And approach that we took with another retailer was looking at vulnerable populations. This was a bit of a leap for me, going from 100,000 products on the shelves to a million products, with somebody's logo on them, and no control over their supply chain, as far as I could tell. The name will remain -- we will remain silent.

Vulnerable population. So, if you're trying to -- if you have a wide array of products and types of products, what are the sales volumes of the products? What are the credible exposure pathways? And what are the potential vulnerabilities?

So, if you're selling, you know, auto cleaning paint to a small group of adult men, who work on specialty cars over the weekend, versus something like a child's shampoo or something that's sold in large amounts.

The other thing that I think you touched on yesterday is how to deal with multiple sources of low-level exposures.

And, Cal, maybe you can address this. I know we've been talking to ORD about their new exposure pathway. They're doing some modeling on multiple exposures from a whole bunch of different personal care products and so that's one. I think that's still early days, but, you know, if we can talk to them about what we need for the DTSC context.

So, that's on that side of prioritizing chemicals. And I wanted to go back to something we touched on, the limitations of the candidate chemical list and the classes issue. If we can be, maybe, more intentional, I think in response to what Helen was saying that, you know, if there are some phthalates, for example, that are a problem, but not all phthalates are, just at least flag that and somehow signal that you are looking at the whole class.

But I would also caution, and I can't quite believe that it's me saying this, but not everything in that class is necessarily going to be a problem. I'm thinking like glycol ethers is the one that I encounter all the time, where they do tweak the function. And maybe we just don't have the data to show that it continues to be toxic, but there does seem to be a reduction in toxicity.

So, two very different comments, but hope those are useful.

PANEL CO-CHAIR FONG: Cal, do you want to follow and comment on the exposure?

PANEL MEMBER BAIER-ANDERSON: Thanks, Ann. Well, just to say, reiterate the point I made yesterday, is that there are a lot of methods under development. It's really exciting. And that this is the opportunity to convey, you know, what our needs are so we can get kind of on their agenda. Otherwise, it will be -- you know, the development

of the products will be directed towards, you know, other squeaky wheels.

So, I think that this is a tremendous opportunity to kind of leverage the research that's going on right now, and it's very practical and targeted. So, that's all I want to say.

Oh, well, one other thing while I have the microphone. On the grouping of chemicals, just to reiterate, Andre said this and Ann said this, that the grouping is a starting point, not kind of the end of it. So, you start, it's like a hypothesis that you're setting up. It's like these are structurally similar.

One observation is that chemists will group chemicals differently than toxicologists. So, you do have to have that kind of collaboration between the two, that groupings could be different based on different end points and different chemical classes.

So, keeping all that in mind, I think I'm stating the obvious to all of us. But it's that starting point, but it's a good place to start, so why not.

PANEL CO-CHAIR FONG: I actually have another comment related to chronic low-dose exposure. Is that the most appropriate exposure parameter to be used, given the fact that, in fact, consumer exposures tend to be more episodic? So, is it -- oh, we did not talk about this

before.

In fact, intermittent type exposure may be more relevant and appropriate for the kinds of issues that we're talking about related to it.

PANEL MEMBER BAIER-ANDERSON: Well, first of all, some consumer exposures are intermittent and some are kind of continuous. So, with the dust, contaminants in dust, I mean that's constant. It's constant whether you're home, when you're in the office, you know, when you're in the car. I mean, it's everywhere. So, you know, that's one exposure kind of model.

The other is the intermittent. It's really hard to get at the intermittent, though. And again, different end points will be relevant, more or less relevant for the different exposures.

So, if you have, you know, like the fetal death end point, that could be a very short window of exposure that's relevant to that. Whereas, you know, another end point might require more kind of chronic exposure. So, it depends.

PANEL MEMBER BLAKE: I would also say it depends on the type of product. And so what I was thinking of is personal care products, where you get multiple low dose exposures from multiple products. So, you might have a very low dose of paraben, for example, but you're getting it in

six or seven different products every day. And so, I wouldn't call that an intermittent exposure, that's almost like a -- so, to steal an ecotox thing, like a chronic, like a -- what do you call it, the persistence -- pseudo-persistence. Thank you. Thank you from the peanut gallery.

PANEL CO-CHAIR FONG: Yeah, so just a recommendation to DTSC. In terms of wanting to explore more about intermittent exposures, on the Risk Assessments Specialty Group, within the Society of Toxicology, has a webinar next Tuesday, specifically on intermittent exposures and risk assessment.

I see Mike.

PANEL MEMBER CARINGELLO: Just a quick comment on the data gaps for hazard traits. I kind of wanted to bring us back around to yesterday, in that discussion, in that I think it's important to note, and Helen brought this up based on a comment that I had made, and I think it's really critical, is when we see these data gaps treat them as neutral. Don't assume a negative or a positive on these data gaps.

And maybe that's going to help you move forward. If there is a data gap, treat it as neutral and then look at it as a discussion point. There's no reason, if there's something that you're looking at in your deliberations and

you say, oh, there's a data gap here, if you assume it's neutral and then come out and ask, create a dialogue around it. Because it's possible, you know, that through things like GHS, which we talked a bit about yesterday, that industry has gone ahead and filled in that gap, it's just not readily publicly available.

So, don't just assume because there's a data gap that no one knows, and don't assume that it's a positive or negative.

PANEL CO-CHAIR FONG: All right, we had quite a bit of discussion on data gaps, yesterday. But let me ask if there are additional comments on data gaps before we switch to another topic?

Becky?

PANEL MEMBER SUTTON: Thanks. Discrete comments a little bit on hazard data gaps and information data gaps. I just wanted to reinforce something the agency's already doing, which is setting staff at key scientific meetings, like SETAC, that's the Society for Environmental Toxicology and Chemistry meeting last week, because this is where they can keep up to date on the latest hazard info. And also, there's a lot of industry and trade association scientists there, who might have some additional insight on ingredient information. So, that's a great way for the agency to stay on top of everything.

I also wanted to mention a few other resources on ingredient information, besides the ones noted in the presentation on materials, which are NGO databases and product testing. Also, some trade association ingredient lists, which typically aren't product specific, but can give you a head start.

There are some SDS databases. It sounds like you guys are looking at some of those. But I'm thinking State agencies probably have some of these SDSs, perhaps, in some organized forms that you guys can check out. Obviously, SDSs have some limitations, but it's something to look at.

And then, finally, you might get a little insight from green certifications because they might tell you what's not permitted, and that might give you some idea of what other non-certified products would be using.

PANEL CO-CHAIR FONG: And so, let me just add something to the ingredients' databases. In terms of, you know, using safety data sheets, so instead of you actually going and then trying to search individually, and make this into a really complex project, some of the work's actually been done for you.

So, there was a paper that was published in 2014, so that would be last year. The title of which is "Development of a Consumer Project Ingredients Database for Chemical Exposure Screening and" (inaudible) -- in which

they went through several hundred MSDSs and actually compiled the information into a database. And these are for household products.

Also, the SETAC used the U.S. Department of Health and Human Services, their household products database. I think that would be an excellent one.

And what about going directly into the websites of the individual companies. So, you know, for example, the (inaudible) -- company. Actually, there's this smart phone app that you can use to instantaneously find out what the ingredients on most of their products. So, it's a mixed use of your smart phone connects with a CPU, you know, bar code, and then it will give you instantaneous information on almost all of their household products, the ingredients.

Have you guys looked into those company-specific type databases?

MR. ALGAZI: Some of us have looked at those. Can you search by chemical and get a list of results? No. We're kind of coming at it from the broad to the narrow.

PANEL CO-CHAIR FONG: Okay. Mike, do you have a --

PANEL MEMBER CARINGELLO: Because you're looking at specific companies, each of those are designed by the company, itself. So, there's no pat answer to what you were asking, if you can do it either way.

Our database, yeah, you can. And if it wasn't easy for you to do it, you know, I would suggest then, if there's a company that lists all their ingredients on a website, if you can't extract it the way you want, it's obviously built into a database. And if you go and ask the -- communicate directly to the company, itself, if you were to ask us that question, it's easy enough for us to switch the data and provide a report. And I'm sure other companies would do the same.

PANEL CO-CHAIR FONG: Yeah, I think that may actually work for a formulated product, but perhaps not for some of the more sophisticated assembled products.

Let me just check and see if there are additional comments on product ingredient data information, before we go to -- Ken?

PANEL MEMBER ZARKER: Yes, just filling off of Becky's suggestion. Washington State and others do have ingredient disclosure data and we will really be making those available. And I think one of the things with our new MOU is how we might connect our staff with your working staff on this. Because, you know, this is a great forum here, but then when we leave, it's great to know who's really working on these things and we can bring it forward.

I also had the opportunity, recently, to attend the SICA meeting. And there was a new tool developed there,

called Chem SHERPA that was produced to facilitate information flow among the supply chains. So, you're starting to see, I guess, more tools out there like this, and I would encourage us to continue to explore, as these roll out.

PANEL CO-CHAIR FONG: Do you want to make a comment, also, on product ingredients' databases? Okay. Well, in that case, let me chat with Bill Carroll to see if he has any insight that he wants to share with us on product ingredient databases and how to get information on the chemical ingredients in products. Bill?

PANEL MEMBER CARROLL: I don't know that I have any particular wisdom, Art. I will say this, and I've spent more time on this recently, as part of the Supply Chain Working Group on Material (inaudible) -- for LEAD version 4. I think there's a general agreement that ingredient disclosure in many areas is increasing and is going to be a coming thing. But I won't say that it's here, yet. I think this is something that you're going to see more of those kinds of inventories over the next five years, than you have in the previous. But I'm not sure I have any real wisdom associated with that.

PANEL CO-CHAIR FONG: Great. Thanks, Bill.

I'm going to go to Kelly.

PANEL CO-CHAIR MORAN: Thank you, Art. Just a

couple of things. Another database you've probably heard of is the Vehicle Industry one, the IMDS GADSL. Now, this isn't publicly searchable. But my experience with the industry is that they are trying to be in conversation, and so they might be willing to share data. So, they're actually requiring reporting of hundreds, probably thousands of chemicals in every product used in a vehicle.

And what's interesting about that data set is that since it's such a wide variety of products, that are also potentially used in other settings, you know, think of all the parts of a car, the cushions, and so forth, and so on, it may end up being indicative as to where chemicals can be found in commerce.

I know the vehicle industry is nervous about being regulated, so I don't know how far that this could go. But it's just an amazing system. You can't even manufacture a part to sell to an auto manufacturer if you don't enter every single ingredient in it. So, it's very powerful.

I wanted to circle back to something Becky said about the importance of DTSC engaging in the scientific aspect of this. And this kind of comes up with Veena's comment, too. Which is that, you know, what DTSC really wants to do is find a problem that's really well-characterized, identified, something that we want to fix as a society. We want to end this. There are salmon dying in

urban runoff that we now link to specifically coming off of roads in Washington State. Every time they come back, before they spawn, they're dying. I mean, it's just compelling to see the science on that.

They're trying to link that back to a product. They're publishing a whole series of paper on that. And we know it's something associated with a car. Every year they get a little more information as the pre-spawning salmon come back and die again, they do a little more work. At some point they're going to find that and publish that paper.

There are other examples where there are more or less compelling bits. If DTSC has the capacity to stay on top of the literature and identify those problems, and say this problem is documented well enough that it really merits our action, then that's super. But that means having the scientists who can review the broad variety of scientific literature.

And you really hear about these compelling things at conferences. And that means being out there at the conferences both to hear and talk to the scientists, because that's so much more informative. And also at conferences, this is where you can present our needs.

So, I would love it if the next product work plan said, we're really interested in these things and we're

finding we have these kinds of needs, and signaling some things out there that scientists might be able to help with, to say yes or no. Because folks out there, in the academic community, the nonprofit community, and industry will probably be more amazing, it's actually amazing to me how forthcoming folks are. How folks will say, if an agency will use the work that I do to make a decision, they're much more likely to focus their dollars and time on it.

So, those are a couple of things. I know it's been really hard for the Department to get out there and travel, but I cannot emphasize enough how fundamental that is to this piece of decision making, and how fundamental that scientific literature access and ability to get at that is. So, thank you, Chair.

PANEL CO-CHAIR FONG: Helen.

PANEL MEMBER HOLDER: I just wanted to add to that. A lot of the major journals do alerts and I would encourage you to use that. So, I use that a lot in my own fields. So, it's somethings hard if you've got a lot of journals to keep up with to read every single thing. Put a few key words in there, you should be able to, without spending a dollar more than you already are, at least get something coming in, letting you know something's going on.

PANEL CO-CHAIR FONG: Let's see, we've touched on the tools and chemical prioritization. We've touched on the

challenges related to data gaps, limitations in the CC list, and product ingredients data.

Are there any more comments on those two, the first two questions, before I ask a really stupid question about a third one?

Okay, in that case, I'm not quite sure what you're asking, Andre and the team. So, if you can just expand on that before, so we can actually get a fruitful discussion going?

Well, actually, let me ask the Panel members this, am I the only person that has trouble understanding what's being asked on the third question? Okay. Andre, would you mind?

MR. ALGAZI: Well, I'm kind of looking at Meredith. I think -- what were we saying on there? Things like low dose exposure. I mean, this is one venue in which we can leverage other peoples' expertise that we may not have. Obviously, that's the purpose for this Panel.

When Meredith and I -- well, can you elaborate a little bit or --

DEPUTY DIRECTOR WILLIAMS: I do think it's hard for the Panel to answer that question without us listing out where it is that we think we lack expertise. And it is things -- it is staying on top of some of the emerging science, the low dose exposure and the pseudo-persistence is

a great example of that. But we have not catalogued those and perhaps that's what's needed in order to have a fruitful discussion.

MR. ALGAZI: And for now or -- okay.

PANEL CO-CHAIR MORAN: This actually leads me to a question. I'm wondering if the Department has ever thought about doing any kind of information request? So, I think a lot of folks, you know, have really compelling problems they've identified. You know, scientists and other folks sort of deeper down, who don't know what to do with that information.

And a lot of research scientists, you know, they're not social bodies. They have no understanding of the literature. It's always fun talking to them at scientific meetings. But they don't know what to do with that information, other than to publish a paper or give a talk at a scientific meeting.

And I'm just wondering, I think that if the Department signaled we're working on this process, now. Now and in the next two months it would be really helpful to receive any input on the topics that are in our plan, that might help us make a decision. It would be really interesting to see what the Department would get.

So, it's something to consider, since it is so hard to signal that. And you could signal that to the

Panel, as well.

PANEL CO-CHAIR FONG: Meg.

PANEL MEMBER SCHWARZMAN: I was just wondering if Kelly could -- I mean, I think it's an intriguing idea. And if I were on the hearing end, the receiving end of that suggestion, my next question would be what forum would you suggest? How would you get that word to the people who need it?

DEPUTY DIRECTOR WILLIAMS: Well, a couple things come to mind for me. First of all, we do have CalSAFER and it does allow us to put out, and we're using it for non-regulatory information, right. So, we could post a request for something and then collect that information through CalSAFER, even though we haven't designed a module that's specifically for data call-ins.

And then, we have talked about workshops on various topics that are not necessarily a workshop on a product chemical combination.

And we've also talked about convening symposia with experts to really dig into -- dig into certain topics.

And then, one idea I've had that I haven't really shared with folks that much, would be to have -- you know, if you look, for instance, at Biomonitoring, they have external experts come in to talk about a particular topic, and then center their meeting around that.

And so far, you know, we've had internal staff presentations because there's so much going on, but I think that is also a great avenue to have those kinds of discussions.

PANEL CO-CHAIR FONG: Let me go to Helen, then come back to Kelly. Helen.

PANEL MEMBER HOLDER: Another way to reach certain specific communities is you might be able to do letters to the editor for certain journals, explaining what you're doing. And because, sometimes, there's some really interesting nuggets in there for, again, targeted, finding just the right people.

PANEL CO-CHAIR FONG: That's an excellent suggestion.

Kelly. Okay, while Kelly's trying to remember what she wanted -- the point that she wanted to make, I noticed that Cal had her card up.

Let me go to Karl.

MR. PALMER: I think, to put some, for lack of a better word, practical perspective on this, I think that one of the things that we're challenged with is that the landscape of issues is extremely broad. The criteria that we look at are extremely broad.

So, a lot of this is about where is our energy best spent and be productive. So, I would suggest to the

Panel that your scientific expertise would be valuable in taking a forum, whether it's from SETAC, or from an industry conference and saying where is a good issue?

To Mr. Lorenz's comment about rather than starting at a chemical, starting at where there's a known issue. We may not have all the answers, but suggesting where there might be some fruitful focus for us and our process, so that we could have an open dialogue with industry, and NGOs, the public, academia.

Because it's challenging for us to make an investment of time and resources on those, unless it's just a webinar or something simple, without sending the wrong message sometimes.

And I think it would be great to hear if there's any kind of consensus or agreement, from all sides of these aspects, of where are some of these areas that everyone agrees might be good for us to look at, and then start diving.

Because we're a small group of folks and some of this is about where to spend that energy. So, I'd be curious about the Panel's comments.

PANEL CO-CHAIR FONG: All right, I have Cal.

PANEL MEMBER BAIER-ANDERSON: All right, so I don't have an answer for Karl's question, but I have a suggestion that might be a potential twofer. And that is to

get your smart scientists to scientific meetings, have them organize symposia around these topics, so they can punch their ticket card to get to the scientific meeting. And, you know, have an organized forum to collect information. This is what I do all the time. You know, I want to go to Utrecht, so I'll organize a symposium. And I think it can be very effective and efficient.

PANEL CO-CHAIR FONG: Are there any follow-up comments?

PANEL MEMBER BLAKE: I was thinking about, you know, how do we reach specific audiences. And that's the challenge, as you say, because your scope is so broad.

But in addition to scientific meetings, do industry meetings that are dealing about this. Because I happened to be thinking about this because I got invited by Libby Summer, no less, to the ZDHC meeting next week. So, that's a specific industry association. And there are many others that we all know, that are working on chemicals issues. So, just to have us all thinking about that.

PANEL MEMBER CARROLL: Art?

PANEL CO-CHAIR FONG: Yes, Bill.

PANEL MEMBER CARROLL: I take it from the laughter that I'm coming from the ceiling or some other unfortunate place.

One of the things in hearing the comments, and

maybe this is not responsive. It's really difficult to do this, isolated in a room somewhere, 3,000 miles away.

But if we're talking about number three, and facilitating research in areas that DTSC lacks, what I hear people talking about is not so much that, but how you can get information shared from people who are doing things that are of interest. And that's not a bad thing.

But if you -- what struck me, in reading the question, would be, first of all, I'm guessing that areas of expertise that DTSC is interested in are also things that other people are interested in. And that would be the first thing to do would be to identify who else does this kind of work.

And in terms of getting research facilitated, perhaps ultimately dialogue with the kinds of people who to the research as they submit grant proposals, if they're academics, or if otherwise when they're planning, and which you would have the opportunity to talk about the kinds of things that you're interested in. My guess is, if I were an academic researcher, I'd be very interested in being able to talk about how the State of California was interested in this kind of work.

So, sometimes you could gently tweak the direction of research to get something more you wanted, if you found the kind of people who were doing that work anyway.

PANEL CO-CHAIR FONG: Thank you, Bill.

I have Meg, next.

PANEL MEMBER SCHWARZMAN: My is a question for the Department, just sort of a request for a quick update. In some Panel meetings, earlier, we were talking about the problem that DTSC staff had in accessing literature. And I was hoping maybe you could give us an update on where you are on that. That seems germane.

MR. ALGAZI: Did you want to say --

DEPUTY DIRECTOR WILLIAMS: Well, the simple answer is we've contracted with a document delivery service. And we also have improved our online request system for the Department's librarian to be able to respond to requests.

So, I think the CPET team is getting the publications that they're interested in, in a pretty quick turnaround.

MR. ALGAZI: Not real time, fairly quick, yeah.

DEPUTY DIRECTOR WILLIAMS: Yeah. And then, we are still in conversation with Agency about addressing this for all of California EPA, but that's a slower moving process.

PANEL CO-CHAIR FONG: I see the time is about 11:00. I'm going to propose that we actually switch to the second topic, which is on chemical and product -- I'm sorry, chemical and functional chemical grouping, because I know several members have to leave at 11:45, and I would really

like to get Cal and Ken's expert insight on this topic before they leave.

So, unless there are objections, I'm going to hand the mic over, and the chairing duties over to my Co-Chair, Kelly. Seeing no objections, Kelly.

PANEL CO-CHAIR MORAN: Thank you. And thank you, Panelists for sticking through this meeting. At this point it starts to be a little brain training. We've been focusing very hard on this. So, what folks who are not in the room can't see, and what's all inside of us, is exactly how hard people are thinking about these things and actively listening to what people say. So, it's pretty tiring and I appreciate you all sticking it through.

So, we have a set of questions before us on the second topic. And they have been striking me as a set of questions that are about chemical classes, and then about functional use.

And because there are nine questions that span the product identification all the way through AA, it might help to pull them up on your piece of paper and we can try to go through them there.

I'm going to propose that we, rather than trying to tackle the nine, individually, that we tackle questions about chemical classes and then tackle questions about functional use.

Does that approach work for the staff and for the Panel? Okay, I think I see yes. Andre's still awake, thank you.

And I also would like to tee the -- actually, let's talk briefly about functional use, because I know Ann, and Joel Tickner gave a presentation to the staff, and we heard a little bit of it here. But I'm just wondering if you want to tee off some of the issues here or tell us what you talked to the Department about, because I think that would help us figure out.

Ken has suggested that functional use is something that perhaps fits better at the AA stage, and not so much at the product selection stage. And so, perhaps you can opine on that, but also give us a little background beyond that, since the staff were privy to some things that the Panelists haven't heard about.

PANEL MEMBER BLAKE: I'm trying to think how to do this quickly. Thank you. Yes, I would agree and I would echo what Ken said earlier, in his wrap up of when structural framing is useful versus functional framing. Although, I think there is a little overlap when you start looking at alternatives.

So, the webinar that we gave was basically based on a paper that's published, and a paper that's unpublished, on just setting out the language of functional substitution,

which is what we've -- a definition that we've created.

And I would say that Cal was, unfortunately, not able to be an author on the first paper, but had -- we won't talk about that. You can probably guess. Sorry. But she has been a very critical part of these discussions, as well. So, Cal, please step in if there's anything I'm missing.

So, we outlined just the initial framing and the first paper was, you know, how do we start thinking about functional substitution. And Andre's slide, actually, was a very good summary of that, of the different levels.

The goal being to think more broadly about what an alternative might be, not just a chemical drop-in. Although, I've been kicked by a chemical engineer for saying it. There is no such thing, really. It's just an easy drop-in chemical substitution, it actually takes a lot of effort to do that. So, relatively simple chemical versus material changes, process changes, or just thinking of function as broadly as you can when you start thinking alternative.

And then an example, and then I've talked a little bit about the work that I've done looking at existing functional use categorization systems, which were built for other reasons. Everything from regulatory reporting, the chemical data reporting under TSCA, to Innovadex, which is now, I believe, part of the UL empire. Which is really, you

know, selling solvents. It's a business-to-business database of selling very specific targeting things. So, you can find a solvent that has particular application on the exterior of an airplane. That's how specific it gets.

And the goal of that was to see if there was something we could use in existing systems that would be helpful for the practice of alternatives assessment.

And in doing that, I took a couple of cuts at that information. One was resolution of information. Chemical hazard properties was level A. Level B is what is the function of the chemical inner product or the substrate that it's acting on. So, if you think about an adhesive, for example, the application I think we talked about is sort of the product application in its function.

I'd like to find words that will actually work for this. And then, finally, what's the sort of -- what's the function that you're trying to achieve, like walkability of a floor. If you're thinking about a hard surface on a floor, you want some sort of resistance to traffic, ability to stay on that floor for a particular period of time, or be removed readily. So, that's the higher level. So, those are the three general areas of function.

And then I started actually taking a cut at who might our data users be and what kinds of information would they want. I'm not going to go into detail on that.

So, the unpublished piece of information is categorizing how existing -- the 16 functional use data aggregation systems that I looked at, what level of resolution of data do they have and who are they targeted to.

There has been some effort within USEPA, particularly in updating the exposure scenarios. And Charles Bevington, who has also been a very active member of our group, did that work and has created a draft of 103 or so categories of functional use from a subset of the categorization systems that I looked at, that they're using for these exposure scenarios.

PANEL MEMBER BAIER-ANDERSON: They are working with OECD, too, so --

PANEL MEMBER BLAKE: And then, probably, the most useful thing, and I may hand this on to Meg, because it's actually the work of her students, I used an example of how -- when you look at function, how you get different solution options. And the example was from the Greener Solutions Class, at the Berkeley Center for Green Chemistry, focusing on spray polyurethane foam.

And the three levels that the students looked at, one was chemical adaptations to MDI, others were alternative materials. And I know Will, who's in the audience, was part of that project as well.

And then biomimetic solutions that may not have been adequately researched, yet, but were promising. And so, the three different kinds of levels of function that we were thinking about. You know, thinking more broadly about how you get a solution for an alternative.

PANEL CO-CHAIR MORAN: And I guess Helen's not going to comment right now, thank you. Oh, okay.

So, let's see, so Cal do you want to weigh in on this? I guess, so we heard just a bunch about functional use and how more detail, so of how one might approach it. And, Ann, I'd say that was primarily in the context of AA. So, defining alternatives, reviewing alternatives.

So, one question for the Panel here is what -- is there a role in the product selection for functional use? And if so, can folks comment on that, now, to help the team.

And I see Cal shaking her head, so maybe she should say it.

PANEL MEMBER BAIER-ANDERSON: Well, I am, admittedly, on kind of the edge of my expertise here. So, I do want to point out that, again, it's like this -- it's not a linear approach that you take. It's, you know, you come at it -- it's that same issue that Meredith and Andre described that it's hard, it's hard to visualize or describe in a picture, but you're coming at it with your multiple lenses.

Sometimes I think about it as being at the eye doctor and you look at it this way, and then you look at it this way. And, you know, you're looking for that sweet spot where the information on functional substitution, structural or category information, hazard information, exposure information all comes together to present that picture.

And it's not -- it's not easy to describe. It's not easy to explain. But it helps to look at it from those multiple viewpoints and with the goal of looking for the sweet spot.

PANEL CO-CHAIR MORAN: So, I guess what I'm asking is does that help -- how can this idea help the product selection process, as opposed to the sweet spot in the AA process?

PANEL MEMBER BLAKE: So, we actually did talk about this and maybe staff can comment on that. We did end the webinar with that, as to how could this be useful in prioritizing chemicals.

And I think we touched on it a little earlier which is, you know, what other things in the functional class, both structurally and functional chemical class, what other hazards might be out there.

So, I'm not attacking this very well, I'm having --

MR. ALGAZI: From a -- yeah, I do remember we

talked about it and trying to -- I'm drawing a little bit of a blank.

PANEL MEMBER BLAKE: Thinking stages are okay. Ken?

PANEL MEMBER GEISER: Well, just I'm trying to -- I'm doing this off the cuff because it's not the way I was thinking about it. But it does seem to me that one objective that would be useful in selecting products is products is the amount -- oops, thank you. The amount of learning and the amount of learning -- the scale of learning. That is, if you do -- I think we talked about this many, many years ago. But there might be sentinel kinds of chemicals or sentinel products in the sense that one product is so representative of its class of products, or something like that, that it's really useful to look at that one, because a lot of people would learn from that one.

And it seems to me, within the idea of function, something -- you could say the same kind of thing. You could say, you know, degreasing or something like that, and find that you selected a product that was involved with degreasing of some kind. But it has all to do with chemical separations from solvents.

And you would find that many other things could be learned from that. So, it seems to me it would have a place in selecting a product as well.

PANEL CO-CHAIR MORAN: Any other comments on this topic?

MS. SHEEHAN: Yeah, I'll say something just for a moment. It's Eileen. I just wanted to point out that I do think it's been very helpful, as the teams look at chemicals and products, to use a functional lens. In terms of, just as an example, certain functions like flame retardancy, there are some inherent qualities there, volatilization and other dispersal, and this kind of thing. This is where we found -- and it even cuts across product category. So, it might be pertinent to furnishings. It may be pertinent to even -- we're finding even, well, in certain textiles and this sort of thing. So, it cuts across.

But there's definitely a value in trying to look at functions that may contribute to this issue of significant and widespread or widespread adverse impact. So, it definitely -- in solvents, similarly, or things that get into water and keep going, or things that have an affinity for dust. And often, it is function.

So, it absolutely has been a pertinent and useful lens in the early identification of chemicals in the product categories that we have identified.

PANEL MEMBER SCHWARZMAN: A small -- sorry. This is a small piece, but related a bit to what Ken and Eileen both just said. If one of the categories for product -- one

of the criteria for priority product selection is -- or priority product prioritization, to be a little circular about it, is the presence of known alternatives, then looking at it from a functional stand point is very helpful.

And I'm cheating a little bit because I'm going back to the alternative assessment process where function is very important, and pulling that into the priority product prioritization stage. But, in fact, that's one of the things that the teams are doing, I think, is saying is this a function that's right for substitution. And, if so, what is the -- you know, then you find the representative chemical and product category that lets you get at that function that's right for substitution.

But I think in that sense and in the same way that Eileen is describing, it's a useful approach to having your -- as one of your many approaches.

PANEL CO-CHAIR MORAN: So, I think what the Panel's saying is supportive of the approach of functional use, seeing that it has a very important role in AA in defining alternatives, but that AA and product selection are not completely separated from each other as, then, it's like everything else here that's linked.

So, yes, Meg wants to say something else.

PANEL MEMBER SCHWARZMAN: I just want to give another example from the Greener Solutions class, which is

we've been running for four years, now, and it only lasts a semester. So, it's a small piece of the job that you all are trying to do. And the students just get it as far as they can in that semester.

But in fact, we are going through -- in a semester we go through this process of identifying a problematic chemical in a product, identifying its function in that product, and then issuing this challenge to students that is how would you accomplish this function without this hazardous chemical.

And that's how we go about it. And we came at that approach because we were pairing -- an important part of our approach was using bios by design, or biomimicry. And to make the bridge from chemistry to biology, you need a function. And so, in a sense, we sort of stumbled upon this approach, but it's served us very, very well.

And so another -- Ann mentioned the challenge around the spray polyurethane foam. But another year we had a couple of challenges around textiles, that was proposed by Levi's. And they were looking at two different chemicals that they wanted to try to get rid of. One was formaldehyde that's used in permanent press -- mostly in their Docker's brand, in permanent press clothing. And the other was the prolematic compounds that are used for durable water repellency.

And the way that we approached it actually was from the chemical function of cross-linking. That's what formaldehyde does to the cellulose fibers to prevent wrinkling. But it's not immediately apparent why that's relevant to the durable water repellency. But, in fact, they had found some potential alternative coatings, but their problem was how do you get that coating to connect to the fibers of the material. So that, again, was a cross-thinking problem.

And so, two very different compounds, two very different functions, and yet there was this unifying function. And by turning to biology and saying, well, how does nature cross-link, and how do organisms in nature cross-link, specifically came up with a tremendous array of very interesting potential substitutes. None of which, by the end of the semester, was in a bottle and ready to use. But it's the first step in investigating sort of what we call it, an opportunity map is where they end up. And some of those have gone on for additional research, actually, at the bench level, because we don't do bench research during the semester.

And some of them that had metal complexes, that imparted a color, ended up being interesting to investigate for the potential overlap with, actually, the positive of wanting to dye fabric.

So, in any case I think there's -- things get so rich, once you step back to the level of function. And I think, sometimes having a little bit of a concrete story about how it works can be helpful.

PANEL CO-CHAIR MORAN: Yeah, I'd like to quickly do that and then I want to come back, and the staff had some questions about resources, other than the ones that Ann mentioned. So, if anybody's got any, think about those.

PANEL MEMBER BLAKE: So, Meg has led in with a positive example. And I'll give you a real life example of how, when you don't look at function, what happens. We all know about regrettable substitutions.

So, back to my retailer. And you brought up the idea of a sentinel product. The way we dealt with a large number of products was to look at a sentinel product and the chemical combination.

And, we looked at a particular function, and because they hadn't looked at that function before, we had a regrettable substitution from a brominated flame retardant to, actually, back to a chlorinated, a new class of chlorinated compounds because they hadn't looked at how do we meet that functional requirement within the product design. So, that's a combination of a whole bunch of things that had come here. That's a real life problem and the approach that we took.

PANEL CO-CHAIR MORAN: So, the staff asked us some questions about are there any limitations on functional use and, specifically, are there any other resources, taxonomies, other approaches for functional use. And Ann mentioned quite a bit here. And I was just wondering if anybody else had anything else they wanted to say?

And we'll go to Ken, and then Ann, if you want to say anything else, or if anybody else wants to say anything else.

PANEL MEMBER GEISER: Yeah, I can't be specific to specific examples of this, but Meg's point, or describing her class, reminds us -- reminds me, anyway, of design classes in general where, basically, one of the things you do is you start the class looking at the function, for instance, in a design of a house, or something like that in a class. What you do is look at the functions that have to be carried on in a room, and then you start to build out of that what the room should look like, and et cetera.

And there are lots of examples of teaching that stuff, and lots in the design field, lots that starts with function. And I was just at a lecture at the Parsons Design School, in New York, for architects who are looking at -- or architectural students, I should say, that were looking at safer materials to use in low-income housing.

And what we were doing was starting there with

function, thinking about, well, what does that material have to do? And does it have to absorb sound? Does it have to be structural? All of those things.

So, not that that's directly relevant, but I just think it would be interesting to look at the literature in that area of design and how function is often the starting point in the teaching design. And, actually, in also doing design.

PANEL CO-CHAIR MORAN: I think Meg might be answering this question. But I was going to pose the question to Meg about function definitions within biomimicry, how translatable you think that might be, functional text on these.

PANEL MEMBER SCHWARZMAN: Yeah, I think it's a potentially helpful resource. I think, probably, you want to start at the chemical that you're interested in and then ask what function that's serving. And it may be helpful, if you're trying to figure it out, to look at the taxonomies that exist, that are created by the Biomimicry Institute, that are pretty available online, I believe.

But you start with the product that you're interested in and the chemical function within it. But it might be helpful to go to that literature.

I was going to take off on a different question that's posed here, if that's all right, about number four

here is, can you suggest a tool or tools that would help us more efficiently screen members of complex classes?

And I was -- I don't know any tools that do that. But I was starting to think about, well, how would I approach it, if I was trying to figure out members of complex classes.

And the way that I would actually do it, and I would be interested to hear from other Panel members if they have other ideas, is I would start to go to the literature on -- the health effects literature, because that's my field, on that chemical class, on that category of chemicals or members of that chemical class. And I would start to find who are the key researchers, who's published a lot on the health effects of this kind of chemical, and then I would go talk to that person.

And that's how I would do it because that person is going to have a wealth of knowledge of, well, this class sort of divides into the orthos and the paras. And the orthos have these health effects and the paras have these health effects, or the short chains and the long chains, or whatever it is.

And your most efficient way, first familiarize yourself a little bit with the literature, but don't try to become that expert. Go find that expert.

PANEL CO-CHAIR MORAN: Thanks, Meg, you're

anticipating where I'm heading because we were just going to close out functional use here and move on to the challenges of chemical classes.

But I know Helen had something to say early on, so I want to offer you the opportunity to finish up on functional use. So, if you want to go into the next one, please do.

PANEL MEMBER HOLDER: So, I actually wanted to -- it's sort of related to whether you should be using functional or structural. Is that one of the things that we have considered is sort of expanding the structurally related to not just be the class, the actual substance that you're looking at, but the degradation products.

So, the example of that is the brominated flame retardants, which is in there. So, there are a variety of different structures of brominated flame retardants, but the reason that you would be interested in them, from electronics in particular, is that at end of life electronics are often burned, and that causes the creation of dioxins and furans.

And so, you wouldn't be regulating the dioxins and furans because they're not in the product. And the BFRs, in some cases, actually may have relatively benign direct toxicology.

And so, what you'd need to do is expand the

structurally sort of approach to not just be the base chemical, but also like the degradation product, or an ingredient or something. You're kind of doing it on the ingredient side with the dioxins. But on the degradation products, this is something to give yourself that -- or give yourself that category that's kind of in between, almost. But I think it fits a little closer in the structural because it's the structure of the degradation product.

PANEL CO-CHAIR MORAN: Thank you, Helen. That's an incredibly important point and I've seen this so much in my work. So, I'm really glad that you raised the whole degradous issue, metabolites for those of you who think about humans, but both. Because the Department does have the ability to work backwards from that, to the real sources, and I'm sure they're aware of that.

So, I want to keep moving over into the classes of chemicals and where we're headed. And there are some questions about addressing data gaps on classes questions related to AA. And I want to make sure we touch on those before Cal leaves.

But there's a whole variety of questions about dealing with these chemical groupings. And we actually started discussing some of this in the idea of how do we approach the listing, the Department signaling of other chemicals that are maybe not listed through it's profiles,

that those are ones that aren't going to be good alternatives. The Department's already done that.

The Department is seeing that other agencies are recognizing the grouping challenge and updating lists accordingly. Meg gave a good example to that. And that may be an obvious idea that the Department should be encouraging the agencies, whose list it's relying on, to consider the issue of chemical classes. Because this is such a problem for our process, it's probably a problem for other processes, too, and important to think about in the health listings.

But, Cal, do you want to say anything about these topics, now, or do you want to wait a minute?

PANEL MEMBER BAIER-ANDERSON: Okay, just EPA, of course, has work plan chemicals. And one of the groups that I'm working with is the chlorinated phosphate ester flame retardants. And there was an index chemical, TCEP, and so we took a broader look at structurally similar chemicals. But then we used both hazard and physical chemistry to kind of narrow down that group.

So, but even still what you find is that there's similarities and differences even within what you -- what appears to be kind of a fairly tight group of structurally similar chemicals.

And so I think, you know, we'll see how this plays

out. I haven't completed the risk assessment, yet. But, you know, I think the goal is to try and capture kind of the similar chemicals, but there are immediately stumbling blocks when you start drilling down into the details.

So, you know, trying to manage that is a challenge. But I think looking -- I think there's value, definitely, in pulling these groups of chemicals together, having an index chemical and structurally similar at least as a starting point.

PANEL CO-CHAIR MORAN: Are there any other tips you can give the Department staff in dealing with this? Basically, I think I hear your suggesting pick an index chemical and then look at the chemistries around that, that are in commerce, or similar function, or what are you --

PANEL MEMBER BAIER-ANDERSON: Well, for us, the function was critical. Like, we weren't going to pick other chemicals that are structurally similar, but not used as flame retardants. Because, you know, it is this combination of chemical and use that's so critical.

I think I'll jump in -- I mean, there are a lot of challenges in this. So, I think I'll jump in later, as the conversation progresses.

PANEL CO-CHAIR MORAN: Okay. So, we do have quite a few questions in this area. And, I mean, we could go around them one by one, but I was hoping folks might be

willing to jump in and try to ask -- look at some of these challenges.

So, if you folks pull this list in front of you, is there anybody who wants to comment on that? I'm seeing a sense of tiredness here. We can go through one by one.

Ken, do you want to go ahead?

PANEL MEMBER GEISER: This in a way, I mean the way Cal was sort of talking about it, it seems to me -- and this was beginning to -- I was beginning to think about a little caution here, as well. And that is that the way I think about grouping, grouping is a way to get efficiency on what we're doing.

You know, we're trying to get away from the chemical-by-chemical approach and finding a way to do at least some of the work we were doing in more grouped ways.

And so, some of the early stuff, like maybe just the screening it seems to me is always useful to do by some kind of class. As you narrow that screening down to getting to something that you're really trying to become very specific about what has to happen to something, though, you run into the fact that not all of the chemicals in the group, whatever it is, are going to be the same.

And so, there's this vulnerability in the group, which is that something, one of those chemicals is not going to perform the same way that others do, either functionally

or whatever. And that becomes a point of vulnerability when you actually try to say it because the challenge, then, is to find -- your challenging the group and you try to find that one exception to blow the whole idea of grouping apart.

So, it seems to me grouping is useful in the first phases of any analysis process, but by the time where you get down to the final thing where you're really trying to say this chemical is going to be in a product, or this is a product that we're going to define, or this is the alternative that we're going to define. You know, you really have to be very rigid about how you think about not allowing yourself to be derailed by the one example of something that sort of blows the group by.

PANEL CO-CHAIR MORAN: Before you hand the mic back, Ken, how could the Department not get derailed?

PANEL MEMBER GEISER: Well, I was thinking it really has to do with the linearity of the decision process. In the early part, grouping makes a lot of sense. But by the time you get down to sort of saying something like, okay, it's going to be this product, this chemical in this product. And maybe you want to be pretty tight about what the group is there.

PANEL CO-CHAIR MORAN: Let's pass this off to Cal.

PANEL MEMBER BAIER-ANDERSON: Yeah, it struck me as that, you know, all differences aren't equal. So, are

the differences -- look to the relevant factors, right. So, is this -- or is it a distraction. So, you know, keeping in mind what you're learning about relevant factors and are they similar based on the relevant factors, then that's an argument for keeping the group together and not getting -- allowing the distraction of the differences, which may not be relevant or meaningful for the purposes of what you're doing.

PANEL CO-CHAIR MORAN: Helen. And then, I want to start asking people if they've got relevant examples of the grouping from their experience. I think it would help to go through some specifics.

PANEL MEMBER HOLDER: So, one of the things that we found to be helpful within these later stages, when we need to be more specific, is that you might start with a group name for simplicity at the early stages, but at some point we list out, actually, all the molecules. Right, so we actually do get a point where we do list that, where whatever substances are actually going to be included, counted in that list.

And that is a little tedious, but we've found it actually, ultimately saves some trouble because you don't have a supplier saying, well, what about this one, what about that one. And it may be like two pages of variations on a molecule, but enough where it's very clear that you're

knocking out whatever you're knocking out, or that you're whatever.

And one thing that we've also found to be helpful in some of the classes, to call out where the read-across is happening. So that if somebody wants to make a claim that something is different, you know, they can go to an end point and say, oh, well, here's different data than, you know, whatever your analog is, showing that it's behaving differently. So, if you had that list of the major molecules that you're looking at, and then the list of, okay, well, we're using -- here's the analog that we're using on data gaps, that might give people that transparency to figure out where to look if there's a difference. And it does, it sets you up to be in a pretty strong data if someone comes in with new data.

PANEL CO-CHAIR MORAN: So, let's go to Meg. And I'm going to start challenging folks to think about specific examples. I think we've heard a bunch about flame retardants, but not about other kinds of examples of the use of groupings, and the strengths and weaknesses thereof.

Like, I know Becky's been challenged with this, with the analytical work at SOPI.

PANEL MEMBER SCHWARZMAN: I just wanted to add on to what the -- the point that Helen just brought up about ultimately getting to the point where you're listing the

individual members of a group, and just underscore how essential that is.

We've done an analysis of red lists, used in the building industry, and where there is overlap, and where there's distinction. And the sort of bottom line, although it takes a lot to say all this, is that there's a lot of sort of whispering down the line, and kind of telephone game of like one list points to these materials in this list, and so everyone points to those materials.

And what can happen is, first of all, a loss of kind of why were these priorities in the first place. And second of all, terrible imprecision that then makes it useless to designers.

For example, there are some building red lists that include polyurethane. Try building a building without polyurethane. You can't. And, yet, polyurethane isn't why the chemical is on the list. Cured polyurethane is completely not hazardous. But what are the chemicals that go into making polyurethane, and before they're cured they're a problem.

So, I think you guys encountered this, also, with the MDI issue.

But, so to get very, very clear about which chemicals and why, and that also involves stepping away from -- once you've got a class, stepping back away from the

class and making sure you know exactly which chemicals you're actually meaning and that they're all there for a good reason.

PANEL CO-CHAIR MORAN: I understand Bill Carroll would like to say a few words. Bill?

PANEL MEMBER CARROLL: Yes, please. And in a way, perhaps what I'm going to say will support what Meg and Ken have said, but I'm going to perhaps say it in a little bit different way.

As you group materials, I'm guessing that you would be grouping materials because they are things that are reasonably data-rich to start with, for this process.

And I think that's important. I think it's important that you know why you're putting something in a group. And I understand the idea of wanting to have a robust group that you could treat together, and why you would be reluctant to entertain a manufacturer trying to, as you said, blow out the group because of one exception.

But I might ask you to put the shoe on the other foot. And say, what if you were grouping things as materials that could be used, rather than things -- grouping things that shouldn't be used. And what sorts of standards might you put on yourself to say, well, I'm going to rule all of these things in.

What you might do at that point is to say, well,

I'd like to at least be relatively sure of what I'm including in the group to make sure that I've got things that are relatively benign.

So, this is a long intervention, in a way, but it's simply meant to say as you group things, make sure you have a pretty good idea of why you're grouping them. And it would be best if you were able to articulate what characteristics that you know about these materials that allow you to put them in the group.

And the second thing, and it goes back a while, and I think it may have been Helen who was talking about this, I think you do want to consider degradation products, metabolites and so on. But my caution here is to make sure that you're not caught up with looking at a process, rather than the result.

So, the example was used of combustion and, you know, I actually happen to know just a little bit about this after some time, and I don't really want to have that much of a discussion. But if the critical variable is going to be what happens when stuff burns, you're going to find that there's a lot of stuff that you're going to want to be regulating. Because burning is just not a good process and you get lots and lots of nasty things out of it.

So, to avoid, once again, having a problem that's too big to solve, try to make sure that you know why you're

including a degradation product or a metabolite, and that the process that gets you there is relatively specific to the materials that you're talking about.

So, you know, forgive me for acting as a cautionary person here, but those were the things that occurred to me as I was listening to the discussion. Thank you, Chair.

PANEL CO-CHAIR MORAN: Thank you, Bill, that's actually super helpful.

I want to offer Cal and Ken any opportunities for last inputs on these topics before your departure. I'm seeing heads nodding no.

All right, and now I want to go back to the question about examples from groupings, and pros and cons what that illustrated. Any other comments on this area? I'm not seeing a lot here.

Okay, so we -- maybe I'll turn to staff at this point and say, you know, we've talked around this topic a bunch. I'm not sure we're exactly hitting on your needs here. So, I'm wondering if you might want to point us to any questions or put something out there for the Panel to react to, that would be helpful to you?

MR. ALGAZI: Well, the one example that comes to mind is the perfluoro and polyfluorinated aromatic chemicals. I mean, sorry, FASP, it was?

Yeah, that our understanding of what we've heard from industry is that there are many sort of different isomers, molecules that are used for the function of stain and water repellency, and nonstick, and things like that that are both functionally and structurally related, but it's a complex group.

So, just as an example, not that we're doing this, but if the class becomes listed as a candidate chemical, it's sort of hard to get a grip on how would we use that if we were looking at one of the product categories that we have? How would we look at that class and what would we say in general? It's hard to single out a single isomer or molecule when it's such a heterogeneous group and there are new ones being developed all the time.

And we know in general that they're very persistent. There's hazard trait data for p-phos and p-fluoro, but it's sort of just a tough nut as far as our framework that we're working in, where we're trying to specify a product chemical combination if the chemical is identified on our list as a class, and we have gaps. We know some general things about the chemicals, but probably we really can't generalize. There's going to be differences. So, that's sort of part of what we're wrestling with, as an examples.

PANEL CO-CHAIR FONG: Just one comment about p-

phos and p-fluoro, and data gaps. You know, yesterday we went over a number of, you know, predictive toxicology tools in the EPA. And my experience is that none of those work for the p-phos and p-fluoro compounds.

PANEL CO-CHAIR MORAN: Yeah, I'm not sure. I mean, I know folks have been thinking about it in terms of which ones are precursors to p-phos and p-fluoro. I've heard the term pre-phos and pre-fluoro.

But does anyone else -- does that tee off any thoughts for anybody else?

PANEL MEMBER HOLDER: I am aware that there is an effort right now, internationally, to try to limit the precursors to very, very low levels, like the TPPB levels, specifically with the intent of knocking out all of the sort of uses of it. So that the contamination levels are so low that you basically would have a very difficult time using any of the final fluorinated compounds because there would always be contamination.

And we can -- I have experts that I can put you in touch with, who are working on that if that's, in particular, something you'd like to discuss. But, yeah, there's a movement afoot.

PANEL CO-CHAIR MORAN: Ann?

PANEL MEMBER BLAKE: I'm going to tackle the broader question, not specifically around this particular

class of chemicals, but how you deal with a class where you can't necessarily generalize and you're missing data.

MR. ALGAZI: Exactly.

PANEL MEMBER BLAKE: I think maybe this is the obvious answer, but just to be really transparent in your documentation of your thought process that, you know, we're concerned about this class because of a couple of different actors and here's why, but we're not concerned about all of them. Just that may be a bureaucratic answer but, you know, I used to work for this Agency, too, so --

PANEL CO-CHAIR MORAN: Ann, when you say that, are you thinking that the Department might list specific members of the class in a product, and then signal that it's -- that alternatives might potentially be from that class, but someone who's doing that would really need to show their work to show that that alternative is actually better? Is that what you're saying?

PANEL MEMBER BLAKE: I hadn't thought it all the way through but, yes, that would work. That goes back to the phthalates and glycol ethers that we were talking about earlier, that not all of them are going to be a problem. But as a class, it's flagged for a very specific reason.

So, admitting that this is hard. Okay, that's it.

PANEL CO-CHAIR MORAN: Other thoughts or comments on this? Great. Are there other things? I'm sensing --

oh.

PANEL MEMBER SUTTON: I just wanted to make a brief point about degradation rates as something that could be worked into this. Although, if it's a strictly hazard framework maybe that wouldn't be relevant. But we're talking about degradants and metabolites, things like that. But if they don't happen quickly enough, maybe they're less of concern than other issues or other relevant factors.

PANEL CO-CHAIR MORAN: Others? Karl?

MR. PALMER: I have a question to follow up on the class question. If the Department were to have a class of chemicals and list a product in a class of chemicals, I'm curious from the manufacturers, would putting you towards the -- looking towards the AA process would that be, in your minds, better or worse, or easier or harder in the AA realm, as opposed to us identifying a handful of specific chemicals, or a couple chemicals where we had stronger data? What's your thought on where that would put you from a practical stand point?

PANEL MEMBER CARINGELLO: It really depends on how you define it when you do the priority product, honestly. If you came across and you did it structurally, and you said here is the structure we're concerned over and gave the reasons for that, that would actually, I think, be easier because it would give us a basis to work on it. And

structurally, you can see, you can go across a whole wide range, and you don't have to list out all of the cast members or anything, you know, that's much easier to work on.

If you do it functionally and you say this is the type of chemical we're concerned on, then I think you have to be very prepared for it to be an elongated discussion. And you'll have people who are willing to come in and talk about it with you and say, okay, when you're saying that function, would you include this, this or this? And you'll have other people who just will say, well, I'm going to be very specific and interpret it narrowly, and then I'm going to put in all these alternates that, really, are functionally equivalent, but I'm going to pretend they're not. And it could be a very messy AA for you to evaluate in the end.

So, I see it being of value, especially in discussion, but I see it in implementation getting very messy.

PANEL MEMBER HOLDER: Yeah, and I would echo that it depends, but lean towards the -- yeah, for the way that we have often done it, the structure is helpful because it does sort of bound out what -- from an alternatives assessment perspective, it bounds out what's in and what's out.

I do think, though, that from a regulatory compliance perspective it's a nightmare. So, if you talk to the compliance department they'll be like, they want cast members. If you talk to the alternatives assessment, the structure is actually --

PANEL CO-CHAIR MORAN: Other thoughts on this? I'm sensing us kind of running out of this topic and I just wanted to see if -- so, first, looking at all of the questions that are in front of us, is there anything else that anyone wants to say? Yeah?

MS. SHEEHAN: Okay, about whether anyone could comment on multi-function chemicals, where we might think that a chemical is performing one function and it turns out it's wearing multiple hats.

PANEL CO-CHAIR MORAN: Can you give an example, or it can be a theoretical one.

MS. SHEEHAN: Actually, I'm trying. There was one that I just ran across, where it was a surfactant, but it also performed some kind of dispersal role as well, and I don't really understand how and why. I'm not knowledgeable enough.

But we've heard this over and over again that many times chemicals -- okay, you're shaking your head, so if you could comment, that would be immensely helpful.

PANEL MEMBER HOLDER: I'll just give you the

example that comes to mind is medium-chain chlorinated parrafins. Also, they're plasticizers and also flame retardants at the same time. That's not uncommon, I'm sure.

PANEL MEMBER CARINGELLO: Or, there are other compounds that you'll put into a product to, say, add water repellency or other functions, yet they also, as you're going through that processing they are processing, as they act as de-foaming compounds, and they do a whole bunch in that product. And, yet, that's not what you would declare their function to be, if you were to look at it as the product. But it's a crucial processing aid that you'll find.

PANEL CO-CHAIR MORAN: And as the mic goes over to Meg, I'll just comment this comes up with copper and brake pads, a really simple example. And the complexity that adds to the AA is that instead of looking at a drop-in substitute for copper that provides both heat transfer and braking noise reduction, manufacturers were looking at a complete reformulation of their product.

So, they're evaluating a whole bunch of new ingredients in the product. So, instead of looking at an AA, potentially with copper and other metals, you're looking at an AA where we're talking out copper, and we're looking at five or six other organic and inorganic ingredients.

PANEL MEMBER HOLDER: I was just going to make

that same point, to say it may not be a matter of selection, so much as in evaluating the alternatives assessment, and the alternative is not one chemical, it might be four. You know, if you're replacing something that's both a plasticizer and a flame retardant, you now need a plasticizer and a flame retardant, so you may have two or more -- or, it may be a full reformulation.

But I think it's maybe more on the AA side than on the selection side, because you may still have a -- the original chemical may still be a problem, but that means the assessment's much more complicated.

PANEL CO-CHAIR MORAN: Meg.

PANEL MEMBER SCHWARZMAN: Just one other example of that scenario that I've encountered is in the process of one of our other Greener Solutions' projects that was looking for safer preservatives for personal care products. And this was something I learned in that process, which is that those companies who were already -- they were trying to do the right thing by finding safer preservatives, were actually interested in chemicals that could serve more than one function because the FDA limits them about what they can claim as a preservative. And there's lists of approved preservatives. And I know that preservatives are outside the scope of this, of this regulation, but as an example.

So, they were actually looking at chemicals that

could impart fragrance, and also serve as a preservative. And so, I think it's very true. And this was all for good. You know, this was trying to improve product and get away from hazardous preservatives that are, nevertheless, approved, but that they think they shouldn't be using.

So, these were people trying to do the right thing and needing to actually use that fact that chemicals serve multiple functions in a product to their advantage, to allow them to use something that they wouldn't otherwise be allowed to use, but that is arguably much safer than what is permitted to be used. Which is a complicated scenario but, in any case, I think it's just another illustration of this notion that if you're removing a chemical for one reason, you may need more than one chemical to replace it.

PANEL CO-CHAIR MORAN: Anyone else want to comment? So, again, I'm going to go back to staff and say are there other questions, either related to this topic or any other topic? We have another hour scheduled and we can wind up early, and people won't mind. And we might give Ken Zarker the mic right now.

PANEL MEMBER ZARKER: Oh, okay, thank you.

PANEL CO-CHAIR MORAN: Yeah.

PANEL MEMBER ZARKER: Yeah, well, this has really been a great conversation. What strikes me is putting this all together and it really comes down to a lot of, you know,

convening around a particular problem. I think you've run into this as you've gotten into this work. And bringing the industry folks together in a way, say, that how are we going to address this as a community, knowing that there's problems, whether it's structurally organized or by function. And you get down to that sort of practical level of, well, what are the opportunities within this sphere?

So, I look at your different categories and there may be some crossover here, we see. But essentially, you know, if we're going to jump into these product categories, you know, there is this convening function that's going to come forward.

And so, I think that we found that example and we're just somewhat opportunistic in terms of where we're going with things. We have particular issues that are regional for, say, Washington State. We look at things like copper and brake pads, or copper and recreational boat point, of all things. You know, who would have known?

So, I think that we are tending to pull -- what I'd say, we pull these threads around, okay, we have an issue with inadvertent PCBs in pigments and inks. Well, we all desire color, right. So, let's talk about how do we do that?

And I think Meg's examples of the Green Solutions' sources are -- that's a great model to deal with. So, I

don't know if we're sort of stuck in this, you know, here's the bad versus how do we address where the market opportunities are to move that forward.

And supporting the folks that work in industry to bring forward, you know, the innovation that we'd all like to see. So, that's kind of a broader look at things.

I think, you know, I'm curious to see how we go forward on the product categories and look forward to, you know, the work that will start to happen around there.

PANEL CO-CHAIR MORAN: So, now is the time where we have -- if staff have other things they'd like us to talk about, we have this opportunity. Diana's got a question she'd like to ask the Panel.

And we need to be prepared that the Panel won't have thought about these questions, so we'll see what we get.

MS. PHELPS: I'm just a curious person so -- and this is sort of related. I work with formaldehyde. I think of formaldehyde because formaldehyde is used in so many different categories. And, you know, as you know I mentioned this before, in the furnitures, and as a resin -- sorry for my accent. You know, as wrinkle-free coating. I mean, you name it, right.

And I look at the (indiscernible) -- and, you know, there's always the discussion about is it a chemical,

is it -- yeah, there's always a discussion. And when you talk about functions, you think about different functions, the same product, but formaldehyde is really different functions in different products, right.

But then, you look at you get a lot of formaldehyde releasers that are found, you know, in kid's shampoos, everywhere, right. Well, thank you, we know that.

So then, my question is, if that is not on the list, right, how are we approaching -- okay, we say formaldehyde, but then it's not really formaldehyde, it's the continue -- so, I guess I always go between I know we didn't look at contaminants, didn't look at the releasers in the first round, but I understand that we may be able to look at contaminants next, which is another chemical for the oxane (phonetic).

I guess my question is, I don't know if it's really a question, it's really a comment that there are a lot of chemicals, you know, like contaminants, like oxane, or formaldehyde, that's really a releaser. How should we approach that? Is it a question for the Department? But I'm just curious about your perspective on those, you know, releasers, contaminants, and how you think -- should they be a priority? Should they not be a priority? I mean, what's your opinion on that?

PANEL CO-CHAIR MORAN: So, I guess the question

for the Panel here is about chemicals. So, there's two things that are going on in this example. So one is that there are chemical contaminants that appear in products, so they're not intentionally part of the formulation. And is there -- are they important? Is there a reason to approach them? Are there any recommendations from the Panel about how to approach them?

And the second part is there are certain chemicals that are precursors to other chemicals. So, we see this, not just for formaldehyde precursors, but also not all precursors are in a class. And I'm sure this is something the staff is struggling about. I know the Water Board's been talking about it.

So, does the Panel have any thoughts about how the Department might approach those two?

PANEL CO-CHAIR FONG: One way that we use to approach this topic is, actually, we concentrate on the use phase. So, a good example, that I think Meg brought up, was polyurethane. So, you know, the final polyurethane, again, is relatively non-hazardous. But it's the monomers and other precursors that are used.

So, that would actually affect, you know, the workers in terms of the manufacturing phase, maybe more than the consumers.

So, we've focused in on the use phase when we're

making these decisions. And so, a really good example would be adhesives. You know, a lot of adhesives have -- you know, the chemical ingredients, if you look at them are potentially hazardous. But once, after going through the curing process, then it becomes a polymer. In fact, you're looking for residual monomers. So, again, use phase is one way of breaking it out.

PANEL CO-CHAIR MORAN: Mike, and then Ann, and then Meg.

PANEL MEMBER CARINGELLO: A problem with looking at contaminants is that there are so many different ways to look at it. And if our aim is not to say that every single company out there, or DTSC, themselves, will analyze every product that is of interest, because I don't think any of us want to say, okay, well, we're looking at cleaning compounds today, let's analyze every single compound out there to see what the formaldehyde content is. If we don't want to do that, it's very hard to track down.

But there are a couple different ways we can look at it, I think. There is the totally incidental contaminants that you wouldn't expect to be there or have reason to believe. And those are hard. You need to do analysis if you want to get to that.

But there are materials that are contaminants, that are just totally incidental. And I'll jump back and

I'll stick to preservatives, even though I know they're kind of out of scope. But you can go back and ask your vendors or ask their vendors do you formulate with this? We might not know it because it has no functional use in our product, but it might go back five tiers. But we can certainly trace that back and find contaminants that way. And I don't think that's unreasonable to start to look at.

It depends on how microscopic you want to get there. How far down in detail do you want to go? But I think that's a reasonable method to do, that's not requiring constant analysis of everything. But it's going back to what you're not necessarily formulating into your product, but might still be present. And you can go back and research that much more easily that research something that got into your product because someone didn't clean a line properly. And it's there, in one lot of your product, and you'd never expect it to be there.

PANEL CO-CHAIR MORAN: While the mic's making its way over to Ann, I'll just throw in a personal comment. Which is I've seen some examples where contaminants have been important and were able to be removed. There was dioxins in a blackening ingredient, or an ingredient in tires, that the DPA found out about and the manufacturers were able to modify the chemical process to take that out.

Another one that has hit the scientific literature

is PCBs in certain kinds of pigments. And these are examples of does it matter? So, is this contaminant important enough in the overall picture of whatever the end point is that we're looking at, that it's worth dealing with? That would be my way of thinking about this question.

So, now I'm going back to being the Chair and turning it over to Ann.

PANEL MEMBER BLAKE: I think I may be just emphasizing some of the things that have already come up. But, sorry, Art, I wouldn't concentrate on the use space, but maybe because I'm thinking about formulated products rather than -- but the example of a polymer is a great one.

I think we need to go back to our conceptual model and say is the contaminant or the precursor significant? Does it hit a significant factor in the lifecycle? Does it hit a worker? It may be neutral in the use phase, like a polymer, or it may have residuals.

And then you could get to the question of one for dioxin. If it was a contaminant on the line, that's not part of my process, versus it's expected from the way I process my surfactant. So, I think is it significant for this particular product, this lifecycle, with the end points that I'm concerned about.

So, I think we go back to you back up and see where it's relevant.

PANEL CO-CHAIR FONG: Yeah, let me just make a correction. It's not so much just the use phase, but different phases of the lifecycle, yeah.

PANEL CO-CHAIR MORAN: Eileen?

MS. SHEEHAN: I do think that I wanted to just briefly require talk, and mention, and respond to what Ken was saying about the importance of convening and bringing people together, bringing -- engaging industry and other stakeholders in how we can address a specific issue.

And I think there's -- there are ample opportunities. And I know that the program is considering how we can hold workshops focused on a functional use, or perhaps it's a group of -- a class of chemicals, dyes, that cuts across our product categories, or surfactants.

You know, so there are ways to engage and definitely that's on the table. And I just wanted to make sure that you all knew that that was definitely something that we're strategically considering. And it also allows efficiencies, and then we might be able to touch on these issues of classes of chemicals, as well as the function.

PANEL CO-CHAIR MORAN: Well, that was a really interesting go-round. I'll just ask, again, if there's anything else, any questions that the Department has? First, with the Department, and then I'll ask the Panelists if there's anything else that folks would like to say?

MS. PHELPS: We talk a lot about the benefit of the functional use when we identify alternatives. So, I just want to go one step further on the evaluation of the alternatives. Because the functional use help us to open a lot of the avenue, not only the chemical drop-in substitution, but also some non-chemical alternatives. Like when we compare those -- the chemical of concern in the priority products, and those non-chemical alternatives, I think the first thing that comes to mind is tools, we often use these lifecycle assessment.

But depending on who's doing alternative analysis, since they probably have a lot difficult to really collect enough information for them to really compare the trade out.

So, I just want to ask the Panel members whether you have some experience or knowledge of the other tools or methods available for compare, for example, the chemical drop-in substitution and those non-chemical alternatives?

PANEL CO-CHAIR MORAN: So, the question here is, you know, how do we deal with the -- what thoughts can we give the Department on dealing with the idea where, instead of switching a chemical for another, you're switching material. You're going from -- you've got a chemical in this plastic, and suddenly you're going to go to metal, or wood, or something else. You know, what kinds of tools and approaches might we suggest?

And I'll start with Helen and then Meg.

PANEL MEMBER HOLDER: Yeah, that's exactly one that we did for flame retardants and plastic enclosures for electronics. And one of the alternatives is no.

And so, probably you're right on the first one. Sort of the next level beyond hazard or chemical acts is often carbon, you know, and energy.

And we do have to be -- what we have found is that we have to be fairly careful with that. There's a huge amount of uncertainty in a lot of those baseline numbers.

So, for example, if you look at the magnesium alloys, depending on how you process that magnesium, there are like three different ways of creating the alloy. And they have these like three different levels of energy, and they're like an order of magnitude range or more.

And so, depending on if you have insight as to which of those sources, then maybe you have higher certainty. But there's a really good chance you're not going to know where that magnesium alloy's coming from, and so you have to make some assumption, right. So, are you going to be conservative and assume it's high? Are you going to take a median? What are you going to do on that? So, that's one of the practical problems that we have found.

When we do -- just on the hazard side of things, it tends to be relatively straight forward because it's just

often there's no -- there's either no hazard or, and this is kind of interesting, when you start looking at like really different types of hazard, back to the metal versus plastic, one of the bondings would be that all of the sudden the dust that you create in machining metal, and polishing metal because a much bigger concern. Right, so you need to look at that. So, you're changing -- you might be changing the end points that you care about, or the processes, or the steps in the lifecycle.

So, yeah, I mean you're exactly right, it is complicated and it's not going to be a nice -- it's not always a nice, neat matrix that you get with the hazard, where you get that nice hazard table and all the end points. And you're like, oh, okay, well, that's good and that one's bad. It's definitely more complicated than that and we've had to come up with some clever ways of trying to put it all in an easy-to-read form because it's not comparing apples to apples, anymore. When you're comparing a magnesium alloy housing to a bromide flame retardant, containing PCABS, at that hazard table. The traditional CMR PTD hazard table is not going to help you.

So, yeah, you're right on. It's a little more complicated. Reporting out the results are more complicated and doing the comparisons are more complicated.

PANEL CO-CHAIR MORAN: Meg? I'll see if anyone

else wants to comment on this or has any suggestions for the Department, for its guidance?

PANEL MEMBER SCHWARZMAN: Yeah, I find myself even wondering if that kind of analysis -- so, let me back up for a sec. That sort of analysis is exactly what our students do when we have them compare the hazards associated with an existing chemical in a product with a non-chemical substitute.

And because we're in a class, we can do that. We set the rules and we say we'd like you to compare on all these factors. And, obviously, Helen gets to set the rules and do that kind of comparison in her company.

And it involves all of the complexity that Helen just spelled out, better than I could. And I wonder if it even -- if you even get to ask for that information, as a Department? That's what I've been sitting here wondering is if -- because the alternatives assessment, are you -- do you even get to ask people to provide you a full impact assessment of what happens after they get rid of the chemical? If all they're doing is getting rid of the chemical because they're making a material change that no longer requires the chemical, do you even get to request that analysis? And that's where I'm hanging up a little bit.

PANEL CO-CHAIR MORAN: So, you're --

PANEL MEMBER SCHWARZMAN: You know, as the AA. As the AA.

PANEL CO-CHAIR MORAN: So, you're asking the question, does this have to go through an AA or not?

PANEL MEMBER SCHWARZMAN: I'm not asking does it have to go through an AA. I'm saying, if a company is getting -- let's stick with this example, getting rid of a chemical flame retardant additive because they're changing the material housing that they're using, does that even become an AA? Does the Department even get to request that comparison be made?

DEPUTY DIRECTOR WILLIAMS: It's a bit of a timing issue. If they are able to move away from the chemical before we finish the regulations, and then they never have to notify us, for instance.

But the alternatives analysis process is to set up to consider non-chemical alternatives, and asks that people show their work around the non-chemical alternatives, and consider the lifecycle impacts, and demonstrate the benefit and possible impacts from their alternatives, be they chemical or non-chemical.

PANEL MEMBER SCHWARZMAN: That's great to hear that that is -- that it falls within the scope. And in that case they have to do the same thing, which often means backing up from a material to its constituent chemicals and

the lifecycle, you know, of that material. And it is harder because you get un-alikes. you know, you're comparing dissimilar, very dissimilar processes and very dissimilar materials and, yet, the comparison has to be made.

PANEL CO-CHAIR MORAN: The one thing I'm hearing from the two of you is when it gets to that decision-making time, the kinds of decisions -- it's very much apples, oranges and pears in terms of the hazard end points that are going to be compared.

PANEL MEMBER SCHWARZMAN: Very much so, and you have to just make it all transparent.

PANEL CO-CHAIR MORAN: Yeah.

PANEL MEMBER SCHWARZMAN: Yeah.

PANEL CO-CHAIR MORAN: I'd like to go back to Helen because she's got something more to say. And I think one of the challenges the staff will be probably looking to address is what Helen was raising about how can this be presented in a clear way, so that it's easier both to look at and facilitate decision making and, also, for the Department to understand the work that was done in the thinking and the decision making.

PANEL MEMBER HOLDER: I'll be honest, we really struggled with that. That was probably one of the toughest parts about that particular assessment was how do you compare something that has completely different concerns?

We really -- we tried a couple of things and we did come up with a table that has some overview, because that's required is to have a matrix of some sort to compare. But I felt it was very complex. But we couldn't come up with anything better. And so, it was a very complicated table that there are like within -- so, there are alternatives, and then there's like lifecycle segments. And within each lifecycle segment there are codes in each box as to what hazard is associated with it. It was, I mean, way more complicated that you'd like to do, but we were doing our best to try to put it into that single view.

And if you were kind of -- if you really understood how you got there, it was obvious. You go, oh, okay, well, this is good for this and that for that. But if you just picked it up, you would never be able to decode it because it was really complicated.

PANEL MEMBER BLAKE: I would say the same thing, we had a similar experience, which is why we scope the plastic scorecard that we created, last year, into just process chemistry. Because when you start getting to the lifecycle questions, it gets kind of crazy.

And we had the example, of course, for example, a carpet made from recycled nylon 6 versus a carpet made from a bio-based material from the beginning, and the relative impacts.

So, I think it comes back to, Helen, what you just ended up with, was what really matters to you when you're making a decision. So, we're back to our critical factors. So, you lay out apples, and oranges and pears. I think, then, the value judgment of your decision starts to become clearer. So, that's not a helpful --

PANEL MEMBER HOLDER: Yeah, I would just second that. The value, when you're changing material, you really are not going to be able to see an obvious winner in those, as a general rule. At least I've never seen that. It's usually you are making a choice that, yeah, there's some tradeoff here. And for the sake of trying to get rid of this chemical, and it kind of looks like it's about right, or we have a risk we can manage, or something like that, those are very messy and hard to challenge, right. So, because you might make a -- you could make a really good argument, you know, for the metal enclosures, but they certainly do have issues, you know, in terms of carbon and all these issues, or whatever. But it's still a very strong case, you know, to do it. So, yeah, those are very messy decisions.

PANEL CO-CHAIR MORAN: I'm going to go to Eileen and then to Ken, and then circle back. Oh, Nancy, do you want to get in before Eileen or --

MS. OSTROM: I just wanted to clarify one issue on

the assessment of the non-chemical substitution is that the impact assessment is a little bit different. The step four, in the first stage, you don't do if you're not doing a chemical substitution. That's really, only, for chemical substitution. Step four is the evaluation and screening step.

So, that doesn't occur, but all the evaluation that occurs in stage two still goes on, and that's where what Meredith was saying happens.

MS. SHEEHAN: My staff work, when I was at EPA Region 9, a number of years, on the flame retardant comparison with flame retardant in foam, and we -- this was the EPA Designed for the Environment. I wish Cal was here.

But we tried, Region 9 did, to encourage them to add a barrier as one of the alternatives to subbing out the chemical. But at least at that time, primarily, EPA's Designed for the Environment Program did chemical alternatives.

And we even created a box, you know, that was below. We created a barrier between the chemical alternatives and the rest. And Leif Magnusson worked very hard on that a long time ago. But it wasn't accepted at the time. There just wasn't, I think, comfort with the methodology and comparing the apples and oranges, and all the tradeoffs.

But I think using the matrices, if people are willing to share any of their matrices, with information blanked out, you know, even to see your headers and comparisons, the students and any others that folks might be willing to share, I think it could be immensely helpful. And I know we struggled with that in Region 9. So, thanks.

PANEL MEMBER ZARKER: Yeah, I was intrigued with the idea of the scorecards, you know, coming up at this point in the conversation. We have been working on a similar one around the boat paint example, where we get down to the level where we're starting to look at the actual products.

And I would be interested in knowing sort of what the -- as we get this information, making that publicly available allows folks to make their own decisions, and how we can, you know, provide that type of information. And do you see an opportunity for these, you know, scorecard type concepts within the realm of these AAs?

PANEL CO-CHAIR MORAN: So, I think what we're coming to is it's complicated, it's important, it depends. there are a few examples that -- to the bizNGO one that Helen's talking about, and so forth, are things that we want to be able to get out there. But there wasn't any clear information.

And, Dr. Doherty?

MS. COOPER DOHERTY: Thanks, Kelly. So, switching it just a little bit. But there's a lot of topics that we've touched on a little bit, like my favorite, which is the pseudo-persistence, or things we've talked about like one aquatic, you know, making sure you're doing the right species and all these kind of intricacies of really evaluating the effect of a chemical during the lifecycle. And that those intricacies are not fully figured out, yet, in terms of how you evaluate pseudo-persistence. But, also, how we make sure that people are evaluating things in a way that's really going to ensure that they're not going to become a problem.

Because, I guess, it's been my experience, I've noticed that sometimes techniques that have been used in the past don't necessarily, in the aquatic environment, exactly mimic what actually happens.

So, you know, kind of how you make sure that these new concepts that are coming out actually get done. That's not the best way to phrase it. But you know what I mean, kind of actually happens on the AA said when people are evaluating alternatives.

So, I guess it's like how we encourage people to do that? So, how we encourage people to do the pseudo-persistence to take those things into consideration when they're looking at alternatives. See what I'm saying?

Like, you know, what you were talking about with the different species in the aquatic assessment, and how we kind of get people to go past just looking at (indiscernible) -- for example

PANEL CO-CHAIR MORAN: I'm going to pass this to Ann.

PANEL MEMBER BLAKE: I think one easy way is to put in -- easy, cautiously -- put it in a conceptual framework and highlight it as these are the significant factors that you think are important and, potentially, the ones that are important in an alternative. And you've got that long list that somebody referred to, yesterday, of all the different impacts and sub-impacts. You can like highlight some of those and say, we particularly want you to look at these for this function, this structure.

PANEL CO-CHAIR MORAN: I'm going to second this on the way to getting the mic to Meg. Which is that I think that it is going to be important for the Department to be highlighting issues. This is where the conceptual model approach is actually super important. And to highlight some of these issues before we're getting all the way through the AA process, and as early as possible in the discussions there.

I'm still trying to figure out how to suggest that occur because it's really the confluence of science with

decision making, and DTSC is going to be, at the end, evaluating these things and saying is it acceptable or not.

And the kinds of questions, like Dr. Doherty is raising, if these are going to be issues the Department's going to be looking at, so it wants to signal early on that people need to be thinking about these problems.

And part of it is, I think, going to be the Department doing that. But it's also, partly, that as the dialogue proceeds people with other insights and information about those products, we're going to somehow need to get that science out there. So that manufacturers are able to understand and recognize that the responsible entity needs to address these things.

That was too long, as my personal intervention. And now, to Meg.

PANEL MEMBER SCHWARZMAN: That's okay, it's basically what I was going to say. You dealt with that, so it frees me up to just mention this one, but just to third what Ann and Kelly said. I think that's the right approach.

I have a little bit of something stands up in my hair, or something, when I hear pseudo-persistence, because I think it -- I would encourage you to be really careful with that because it conflates persistence, which is actually a chemical property with an exposure factor. You get it. Okay, just wanted to check, just because hearing it

repeatedly was making me go like, ooh, ooh. I was cringing. I want to make sure you understand. Okay.

PANEL CO-CHAIR MORAN: Karl.

MR. PALMER: I just want to make a comment that, you know, in my experience in the past, different programs, like Clean Up and Hazardous Waste, which at face value are prescriptive programs, that you would think it would be easy because it's all there. But the devil's always in the details and the dialogue.

And I wanted to stress Kelly's point about the dialogue and remind folks that as our team has heard from me often, this is an iterative process. The Department, it's encumbent on us to make decisions about what we put forward.

One thing we're hearing is that as we do that, it's important that we're clear about why we're putting something forward, and the basis for our decision making.

But I just want to stress that that's a starting point. Just as we've had a long dialogue with the industry folks from the products that we're proposing to move forward on, already, is that we need continued input. And that this isn't -- it's going to be iterative once we go out on the street, and we need engagement from all stakeholders.

Because these are complex things, the devil is in the details. And we appreciate everyone's input today, but I'm just in part speaking to those people on the web is that

we need that continued input because it will be iterative. We will be learning as we go. And it's clear that all the great experience around the table has learned a lot in the efforts that you've had, and this will continue.

So, there aren't answers. There's no silver bullets. So, I'm just -- I'll get off my soapbox, now.

PANEL CO-CHAIR MORAN: So, I think at this point we are going to transition to closing down the meeting. I want to check in with Dr. Bill Carroll, and see if he's got any last remarks he'd like to make?

PANEL MEMBER CARROLL: I really don't, but thank you for accommodating the fact that I wasn't able to be there. The discussion is always quite interesting, as usual. And, once again, I'm most sorry not to be able to see you all in person and have the opportunity to interact with you.

PANEL CO-CHAIR MORAN: Well, we are also very sorry not to see you in person because we would have very much enjoyed being able to thank you in person for your long, dedicated and amazing contributions to this program, and to the leadership of this Panel for so many years.

So, you'll be receiving, and I'm sure viewing and hearing the presentation, and thank you from yesterday. But I think, on behalf of the Panel and the Department, I want to make sure that we acknowledge you directly, how much

important that you've done for our State. So, thank you.

(Applause)

PANEL MEMBER CARROLL: Thank you, Kelly. I appreciate that a lot. Thank you, all.

(Applause)

PANEL CO-CHAIR MORAN: So, with that, I think I wanted to turn this over to Meredith, briefly, to see if there's any wrap-up, follow-up thing?

DEPUTY DIRECTOR WILLIAMS: Really, my final comments are all the thank you's. And I will start with Bill. Bill, you proved your value as a Panel member as you were with us for a relatively short time during the conversations over the last couple days, but yet, you managed to make some really important contributions. And I think that's really emblematic of the kind of participation you've offered over the last many years. And we thank you for that.

And as Kelly said, we will be sending along some appreciations for all of the work that you've done. So, that is my --

PANEL MEMBER CARROLL: Thanks so much. Thanks, Meredith.

DEPUTY DIRECTOR WILLIAMS: You're certainly welcome.

And then, I obviously want to thank the Panel

members for the time, and for the service, and the thoughtfulness. And we didn't talk formally about the possibility of reaching out to you, but I do -- because you're so generous, I'm just going to continue to presume that you're going to keep being generous. And we may start tapping you for more individual conversations that are specific to your areas of expertise, and really trying to make those connections.

It's been very fruitful to be able to talk about the Stormwater Initiative with Kelly, or to have Ann work with Joel to give us some perspectives on functional use, or to have Meg tell us about some of the tools that are used in the Greener Solutions Program. And so, I think we want to continue to do that.

And I know Art's offered some of his expertise around economic analyses. So, thank you for your time and for your contributions.

I would be horribly remiss if I did not thank all of the administrative staff that was on it, and not just the administrative staff. So, Corey, thank you very much. Myra, tremendous job, thank you. James. It actually -- it worked. There's a back story to that.

And Heather's not here and Lynda's not here. And, Nathan, thank you for managing the comments and all of the mic running, which I know was quite challenging.

(Applause)

DEPUTY DIRECTOR WILLIAMS: And then, lastly, I want to thank the Co-Chairs. There was reference, yesterday, Ken made reference to the fact that there's a lot of back work that happens before the meeting, to make the meeting come together. And the schedules for these two, over the last several months, have been incredible. And I do not really know how you found the mental, let alone the physical space to find time for us, to help us think through the topics that we would discuss, and to help us plan for this meeting.

But you not only did that, but then on top of all of that, and the physical exhaustion you probably are experiencing, you led us through this meeting and through these discussions, and I couldn't be more appreciative. So, thank you so much.

(Applause)

PANEL CO-CHAIR FONG: Well, no, actually, one thing I do want to say is just an acknowledgement on the amount of really hard and fantastic work that you're team has put in to putting the AA Guide together, and the implementation of the program. It's just amazing.

(Applause)

PANEL CO-CHAIR MORAN: And I want to second that and say thank you to Meredith, Karl, and I want to name

everyone in the room because each of you has individually done something really amazing for our State. And you're moving things forward. You're playing a really critical leadership role in the journey to safer products. Our world will be different because each of you have been part of this process. And I hope you can remember that every day, because this is a lot of work and there's a lot of ups and downs.

And it is an honor, on behalf of the Panel I want to say it's an honor and a privilege to be able to support you in this effort. So, we really enjoyed that.

Again, I want to thank the Panelists for their dedication here. And I'm very hopeful that this process will continue down a successful journey. And I'm sure this Panel and future Panels will be here to support the Department.

So, I'm expecting that there will be a restructuring of the Panel in a meeting, in the spring, planned around the next round of the AA Guide. Okay.

Are there other of either administrative or items? Okay, everyone says they're good.

So, with that, I thank you to everyone. As we adjourn the meeting, those who are looking for transportation to the airport or lunch information, gather over here, next to Art and me. And we're formally adjourn

this meeting. Reminding you that those who are going to lunch have a Bagley-Keene obligation not to discuss the topics in front of the Committee.

Thank you and good day.

PANEL MEMBER CARROLL: Thank you, everyone.

(Thereupon, the Meeting was adjourned at 12:32 p.m.)

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REPORTER'S CERTIFICATE

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 3rd day of December, 2015.

Kent Odell
CER**00548

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I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were transcribed by me, a certified was under my supervision thereafter transcribed into typewriting.

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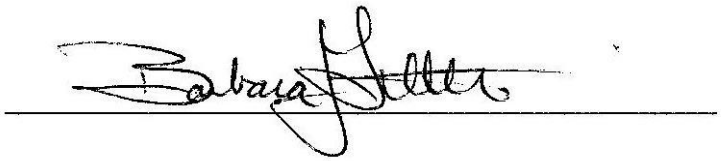

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