STATE OF WEST VIRGINIA

DEPARTMENT OF DEPARTMENT OF ENVIRONMENTAL PROTECTION

HUMAN HEALTH CRITERIA WORKSHOP

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BEFORE: LAURA COOPER, Chair
ROSS BRITTAIN, Member
AUTUMN CROWE, Member
KATHY EMERY, Member
CHARLES "LARRY" HARRIS, Member
JENNIE HENTHORN, Member
SCOTT MANDIROLA, Member
ANGIE ROSSER, Member
CHRIS SMITH, Member
ED MAGUIRE, Member
JASON WANDLING, Member
DAVID YAUSSY, Member
KERRY BIRD, Member

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Reporter: Amber Garbinski

WITNESSES: Charles Harris, Jennie Henthorn, Ed Maguire, Scott Mandirola, Angie Rosser, Chris Smith, Jason Wandling, David Yaussy

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P R O C E E D I N G S

CHAIR: Okay.

So welcome to the Human Health Criteria Workgroup. And today, our workgroup is really going to earn its name. Because this is a real --- this is a real working session. I've been kind of worried getting prepared for this one, because I don't have it all planned out. Like in the past, I would be like well, I know everything we're going to talk about. Here's every slide that we're going to go over today and, you know, it will all --- it will all work out to --- here he is. There's Larry. He's joining now.

But today we're going to be doing some real work through these flowcharts that have been developed by various members. And I'm really appreciative of that work. Thank you for everything you've put into it. In the meantime, as far as making that flowchart, communicating with us about it, and us having discussions in the meantime before these meetings. Because we only have two hours to these meetings, so it's nice to be able to do some discussions on the side between. And I think we'll need to do that again before next meeting.

But first, I wanted to do a quick recap of the last meeting. We had --- the first thing we did is we finalized our goals. And I can bring those up and show them if anybody wants to kind of look at them quickly before we get started. And unless anybody speaks up, I'm going to just read what our goals are.

Our goals are to learn about water quality standards, how science is used to determine these standards, and about recent changes made by the EPA, to reach consensus on science-based standards that protect West Virginia citizens against water pollution, and to recommend to the Secretary the above standards for approval by the EPA and legislature. So we did that last time.

And then we moved into discussing the 25 15 updates and how we can get through these remaining 36 criteria. We looked at them by groupings. Chris showed us this spreadsheet where he had grouped them and how --- what EPA had updated in 2015, whether they had updated the bioaccumulation factor, cancer slope factor, or RFD or both of those. And we kind of looked at them that way in those groupings.

We talked then about whether we can adjust the BAF when CompTox has a very different BAF. And that

was something that we just kind of talked about and will talk about again in the future when we work on another flowchart for BAF I think. That will be probably something we do maybe next meeting and between now and next meeting. But I'm getting way ahead of myself. Okay.

So also at the January meeting, I said that I would also ask EPA about the use of CompTox BAFs. We did ask EPA about that and also about the use of tier 2 and tier 3 cancer slope factors in RFDs. And we didn't get like a really solid response. Just basically that we would need to consult with them on each of those, because that's --- that would be sort of on a case-by-case basis.

So that's going to be --- I mean, that's going to be a sticking point probably, because we can't just --- in order for them to approve criteria that we recommend, that we make revisions to, we're going to need to have some conversations with them whenever we decide to do that kind of thing.

So after that, in last month's meeting, we moved onto Jennie's spreadsheet, which she had put together. She had listed the remaining criteria and came up with 18 that might have been --- that might be something that we could agree upon. And while that might

be 18 that we could agree upon, we kind of got into this --- well, we kind of made a flowchart, a decision-making tree to decide, you know, for each one. And so that's how we got to where --- where we are today in having these flowcharts.

And during Jennie's presentation, we talked a bit about gamma-BHC among those 18, because CalEPA had a study that was more recent. And we also talked a bit about ethylbenzene, which was another concern, because EPA uses the RFD, which is the non-cancer --- non-cancer way of calculating the criteria. But CalEPA has a cancer slope factor, so we weren't sure about that one either.

And again, I said I would talk to EPA about using its tier II and tier III, and they told us that we'd need to really discuss that further.

So do we have any --- thanks for hoping in here, Larry. We were basically just going over a review of last month's meeting. So after that review, does anyone have any comments on any of that from last month?

All right. I don't see anybody unmuting.

So we can move on to talking about the flowcharts that have been produced this past month. I wanted to start with looking at West Virginia River

Coalition's flowchart. It was updated again just yesterday. And I don't know that --- I don't think everybody has seen it yet. I don't think I sent it out yesterday afternoon, but we can start with looking at that one.

So basically Jennie produced a flowchart. And Autumn produced a flowchart. We have comments from either groups on those. And I just wanted to look at those to start out today.

So if --- Autumn, would you like to share your screen and go through your flowchart, or do you want me to do that?

MS. CROWE: Either way, I don't think I have the capabilities to share. So you either have to ---.

CHAIR: Okay.

I can share my screen and you can kind of walk us through it and we can talk about it.

MS. CROWE: Okay.

CHAIR: All right. So everyone has seen a version of this flowchart, but not the revised version from yesterday. So if you want to --- connect my people that are here. Everybody gets small when I share my screen. Yeah, if you want to walk us through this, that

would be great.

MS. CROWE: Sure. So basically we start out --- we kind of took what Jennie had done and modified it a little bit, where we saw, you know, a need for additional information. And then from --- so from the previous version, we also discussed with DEP, and Ross had some suggestions for how to modify it further to get some of the questions that were lingering around using the five-year age of data as a qualifier. And so basically you have the parameter of concern and you identified the toxicity value that was used in the calculation.

And then you go through the process of tier I. And we actually split out tier II and tier III, because we felt like, you know, while you can look at them concurrently, there was a preference for tier II over tier III. So we felt like that should be spelled out in the decision flowchart. So there's a lot of --- a lot of decisions and a lot of arrows pointing you back to different directions that basically you go through and look at IRIS tier I. And if that IRIS value is more recent than the calculation from 2015, then you would accept IRIS. If it's not, then you would go into the tier II databases.

And in tier II, they haven't been thoroughly as vetted as within IRIS, so you would also have some additional criteria, whether the value in the tier II databases follows the current toxicology methodologies and whether it has a higher confidence than the value used in 2015.

I'm not as familiar with the toxicology methodologies and the --- Ross is saying that the confidence has a ranking, like high, medium, or low. So we might need to discuss that further, like what is, you know, the accepted methodologies. But we could put that in like a --- an addendum or something to kind of explain what exactly we're looking at when we're looking at those different methodologies.

So then if it meets them --- all of those criteria, then you would accept tier II. If it doesn't, then you would go into tier III. And then tier III, you go through the same steps, is there a value that is more recent than the 2015 value, does it follow the current methodologies and is there a high confidence in that value? And then you would accept tier III.

If there's nothing in tier II or tier III, then you would go back to IRIS and see if there's, you know, something in IRIS that might not be as recent, but

has the methodologies and the confidence that you need. And then if you can't get anything out of IRIS tier II or tier III, then you would go back to the criteria that was used in the 2015 calculation.

CHAIR: All right. Thank you for going through that. There are a couple of things that we --- we've put together a flowchart that looks a lot like this. But we were thinking that --- to base it directly on 2015 is a little limiting, because we want this to be able to work for any criteria. It might be a criteria that doesn't have a recommended criteria yet, or you know, if EPA in their infinite wisdom ever decides to update the criteria again, then it would, you know, 2015, having it in here would be --- it would be out of date at that point. So we did want to maybe make it so that it didn't refer directly to 2015 or the 2015 updates.

But I do --- I do think it's important that we separate tier II and tier III because it does seem to be a hierarchy there between those, despite even just the name. But I think that just even beyond the main tier II and tier III, there is a hierarchy there based on that.

Whereas the tier II is the --- is EPA's provisional peer review toxicity values, and then tier

III includes, you know, other agencies that have put things together --- put these values in.

So do we want to also look at --- Jennie, would you like to go through your --- the flowchart that you prepared as well, or should we move on to a flowchart that Ross has put together for us that kind of, I think, addresses all of our concerns? I think we might be able to ---?

~~MS. Henthorn~~: Let's just move on.

CHAIR: Okay.

So I want to show you this other one. Wait. I'm not showing the whole screen, so it will be right here. No. Sorry. Here we go.

Okay.

So Ross was very kind to put this together just last night. And on --- last night, I guess, on paper. And then put it into word this morning. So I really appreciate that effort.

And this --- if you want to go through this, Ross, for us, and then we'll talk about the things that I mentioned. And also, Autumn, we totally understand your thoughts about the methodology and the confidence value and we'll talk about that in more --- in a bit. But we wanted to get --- get --- look at this

first. And then we'll decide about --- then we'll talk about how we can decide on methodology and confidence.

MR. BRITTAIN: Sure thing. Thanks, Laura. So, you know, we talked with Jennifer yesterday and, of course, we hs conversations with Autumn as well. So I was trying to accommodate, as much as possible, the concerns that every --- each group had about the decision process for picking out the different toxicity values. So rather than --- rather than --- and I know that, you know, the manufacturer's association had a particular concern about referring back to the 2015 guides, like default saying that those are the way to go. And we kind of agreed that, you know, under certain circumstances, you might not want to go that way, because there may not be values there especially.

So rather than going with that assumption, I just started off by saying let's look at IRIS. IRIS is the gold standard. And is there a toxicity value in IRIS? If there is, then you ask the question of is there something that a more recent toxicity value has been developed either under tier II or tier III and --- or is the IRIS value more recent than any tier III or tier II. And if so, then use the IRIS value. But if there's some more recent information that has come out, then you can

go back down to double check. First, tier II, because that's the preferred --- that would be preferred over any tier III as well. And remember that the tier II is --- it's actually reviewed by the same people that do the IRIS. The only difference is that they did not reach a full consensus to get it listed in IRIS. They came up with a provisional level. That's what the P in the PPRTV stands for. It's provisional, saying they don't --- they don't have full contingence on it yet, but it's undergone the same kind of thorough review that any IRIS value would have. So that's why it's tier II.

So tier II, go through the similar question we asked before about, you know, did they use the most updated toxicology methods in that tier II value. If yes, then you move onto the next question. If no, then you should check it out to tier III values next. But if it was a yes to the updated toxicology methodology, then you look at does it have a higher confidence rating, the low, medium, high type of rating then what was used in the IRIS. And if it used more modern --- more updated methodologies, and has a higher confidence rating, it should definitely be used over the old IRIS value.

If, however, it didn't have the higher

confidence, meaning even the older IRIS value is --- still has a higher confidence, then we should still keep the older IRIS value. So that would take you down to looking at tier III and see --- and do the same sort of processes of --- for any tier III value, CalEPA, Office of Pesticide Program, that's what we --- ATSDR, New Jersey DEP has a few values as well, and of course, there's Health Canada. There can be other sources as well, but those are the big ones.

And then you ask the same set of questions. Is there something there that in tier III, is it --- does it follow more up to dated toxicology method than IRIS? And did it --- and then if so, then did it --- does it have a higher overall confidence rating. Then if so, then you should use the tier III value. Otherwise, you should default back to the IRIS value if there is one. And obviously if --- this is something that we haven't put in here, but if there are no options in any of this, then just --- there's no --- no value to chose from. If there's nothing in IRIS tier II or tier III, obviously there's no value to chose from. Just assume that there is some sort of a value out there. That's something I --- you know, as I was thinking about it, because like I said, it puts it together pretty

quick.

As I was thinking about it here, going through it, there could be another off ramp for if there's no value whatsoever.

And then I guess one other question I have for you, Jennie, is on the --- from the manufacturer's side of things, you know, when I go down to tier III, because you had also had expressed concerns about tier II and tier III, looking at them both simultaneously. And they are really different. But in that bottom row, where we're looking at tier III, it's like we can also compare to tier II as well, not just tier --- not just IRIS, but compare to tier II. So I wanted to get your thoughts on that.

MS. HENTHORN: Honestly Ross, that was the only comment I had is that we're only comparing it to IRIS. There may be some merit to comparing it to tier II. But when I was thinking through it, if you're comfortable with the tier II is not acceptable for the purpose, then it should work. It may be --- it would be good to work through one of the ones where they accepted a tier III, just to make sure we don't see an issue with it, but I think logically it makes sense.

MR. BRITTAIN: Uh-huh (yes). Thanks,

yeah. And that was --- that was an area, I was wondering if you would --- if you would have any issues or any questions there.

MS. HENTHORN: I think I'm okay with it.

MR. BRITTAIN: Good. I'm glad to hear that. Maybe building an off-ramp for when there's no --- no values in any of those categories.

MS. HENTHORN: Yeah, I was wondering about that actually. I mean, what do you do if there's nothing? Just don't do --- stop.

MR. BRITTAIN: Uh-huh (yes). Yeah. Yeah. I want to think that ---.

CHAIR: Is that kind of where we are with the PFAS chemicals. for example. right now? Like are there any tier II or tier III values?

MR. BRITTAIN: Yes and no. This is --- you would do this for your CFS value. And then you would do it again for your RFD value. So you have many chemicals that have either CSF or an RFD, but don't have both. So you can easily come up with --- come across a dead end where there's nothing there. So that's where I think that I do --- we do need to add something on that --- something on that. So you may come up to --- against that dead end for a CSF value, but you've got it for your

RFD. And the RFD, if you chose --- and, of course, if you have both an CSF and RFD, you should chose both. Run the numbers and find out which one is more conservative. But that's another routine, another flowchart.

CHAIR: So a question for Autumn, and of course, you can comment on anything else, too. But how do you feel about starting off with is there a toxicity value in IRIS rather than referring specifically to 2015?

MS. CROWE: I mean, I think it makes sense if this is going to be used, you know, separately from the criteria that's --- that was developed in 2015. If this is going to be used for other criteria. And then also, you know, if this is going to be used going forward, then it doesn't necessarily make sense to connect it with the 2015 values.

MR. BRITTAIN: Yeah.

MS. CROWE: But one of the questions I had when developing the --- going through flowcharts is, you know, was the 2015 --- were they using the IRIS database mostly?

CHAIR: And that's a great question. We're going to go onto that pretty soon, where Chris has put together some information that shows exactly what EPA did use. And then if you ran that through this kind of

flowchart, would we have come to the same decision?

And then we've had some noted where we have questions --- further questions and some where we don't have further questions, because we would have come to the same decision with this flowchart.

MS. CROWE: Another question I have is, you know, in the tier III data, there's so many options, like how do you chose between those options if everything else is equal in the other criteria? Like they use the same methods and they have the same confidence, but they came up with different values. So that's something we might --- I don't know if we'll run into that or not. But something ---.

MR. BRITTAIN: Yeah. Theoretically it's possible. Just knowing the tox data that's out there, though, it's going to be --- the probability of it happening is extremely low. You know, they'll be --- they'll come up with different values because they used different methods.

CHAIR: So the other thing is --- I don't know if you guys can see my cursor, and I can't figure out a way to make it bright. But the middle of the chart, where we talk about does the tier II value or does the tier III value follow updated toxicology methods?

And does it have a higher confidence rating? These are really big questions. These aren't questions that we can just answer by quickly checking the database.

This would have to be looking into the actual methodology of the study that produced the tier II or tier III value. And it would look into --- and I don't know that these databases actually determine a confidence rating like they do in the IRIS database, where they rate it as high, medium, or low confidence. But in these tier II and tier III sources, I don't know that they do that. And that's --- that's kind of why they are tier II and tier III sources, I would imagine.

To make it to the IRIS database, it has to be fully vetted by EPA and not only the EPA provisional --- you know, in the provisional group, but actually to get it from that provisional group to the tier I IRIS database, it's strongly vetted. And that's kind of the vetting that we would be doing in the middle of this flowchart, to make those decisions to use the tier II or tier III value. And that's going to be a challenge for us in the Water Quality Standards Group, me and Chris, and it might be a challenge actually defending that to EPA, saying we did this. We determined that the methodology is good. We determined that the confidence

interval is adequate. And we would like to go with the tier II value or whatever.

So there's a lot of questions there. But I think it is interesting that when you use this methodology, we will --- we will find that for the decisions that EPA made in their 2015 update, there are many criteria for which we would have come to this --- we might have come to the same decision.

MR. BRITTAIN: I can say to you, Laura, ---.

CHAIR: Further --- go ahead.

MR. BRITTAIN: I can tell you that under tier II, they also rank it with the confidence rating as well. Those two have a confidence rating. Under the tier III ATSDR will give you a confidence rating. CalEPA, New Jersey, and OPP, it's hit and miss. So usually they do. They're supposed to. But they don't always. I've seen circumstances where it's not there.

CHAIR: And do they use the same criteria for that confidence rating that anyone else would?

MR. BRITTAIN: Yeah. It's somewhat subjective just from chemical to chemical. But generally, yeah, it is the same criteria. They're trying to standardize that as much as possible.

CHAIR: Well, that's good to know. But again, when we go to EPA with revised criteria, we're going to have to --- I mean our defense of that criteria, when we propose it to them, would include whatever we did to come to that conclusion. But we would want to talk to them in advance also to make sure that it's --- that it's going to be all good whenever it finally gets to them.

So when we talk about updated toxicology methods, is that something that is standard, that updated methods are better than older methods?

MR. BRITTAIN: Like using updated methods, we're talking about sample size, whether or not --- how long of a study is it? Is it one generation? Is it multi-generations? Are you looking at both sexes, male and female, across multiple generations? You know, the type --- are you using a roots root extrapolation, meaning, you know, maybe somebody --- you're using --- you dosed your rats or mice with the inhalation and you're extrapolating to what would be the thermal contact or ingestion, something like that. So those are the types of factors that we're looking at and determining whether or not you're following appropriate methods. You want the dose to be the --- related to the actual response, meaning --- in this particular case, we're

talking about injection. So you want the dose to be via ingestion, not thermal contact or inhalation. Anything that --- those are the kind of factors that we're looking at to determine whether or not it's the most applicable.

And unfortunately, like I said, you said --- as I mentioned to you yesterday, Laura, I think that right now, I'm probably the only person on this group that has the expertise to be able to do that kind of analysis. And I don't want to put all the eggs into one basket. I'd like to have some --- at least be multiple eyes looking at that. So that would be the one thing that I have to be concerned about doing that kind of analysis.

Now, when it comes to looking at the overall confidence rating, that's going to be the confidence rating from the --- the group that actually came up with the number itself, how confident they were. They should be fairly straight forward if you look at that and tell what had happened like that. But determining whether or not they actually used an appropriate methodology is going to take a toxicologist to do that.

CHAIR: And a review of the actual study or studies that were used to put it --- which we kind of

talked about in some detail when we were talking about benzo(a)pyrene, because we needed to look at what actually happens in the research that changed that number recently. And let's --- I mean, real quickly, if we were looking at this flow chart and we were running benzo(a)pyrene through it, we would say okay, is there a toxicity value in IRIS? Yes. Is the IRIS value more recent than any tier II or tier III value? Yes. And then we would just go straight to use the IRIS value. And we know that that IRIS value --- that current IRIS value does not match what EPA used in 2015, because it's the only --- it's the only one that's been updated since 2015. So that would be an easy one that goes right across the top of the chart.

And by the way, I think we've probably mentioned this in the last meeting, but I did talk with EPA about the use of the new IRIS value for benzo(a)pyrene and its related PAH's. And they said that as far as that one goes, because it's in the IRIS database, it's updated since 2015, that they are --- they would be fine with that --- that revision, that change. That one they --- we don't have to --- we don't have to consult with them anymore on that because that's an IRIS value. And I would think that in the future, if that

happened again with any chemicals, that would be the same decision on their part. As long as it's in IRIS, they're completely cool with it.

And, of course, in their 2015 update, there are many cases where they used the tier II and/or tier III value in their decision making. So they --- they do use them. But the question is us deciding to use them would be --- we would need to consult some more with them and do the kind of investigation that Ross is talking about, about the methodology, exactly what happened in those studies.

MR. BRITTAIN: Although I'd be willing to bet if you --- if our process came up with the same tier II or tier III value that they used in the 2015 update, they would be fine with it. I don't think there would be any question.

CHAIR: Right. So fundamentally, when we look at this flowchart, do we have any show stopping problems? I know you want to see how things run through the flowchart and compare that to EPA's 2015 update. But when you look at this flowchart, we've had a chance to look at it for maybe 10 minutes now. Do you have anything that stands out at you that you can just --- you couldn't live with, including any spelling errors, since

we just made it today?

MR. YAUSSY: It's not a problem at all. But I just want to make sure I understand. On the bottom, there's a reference to IRISI. Is that a typo?

MR. BRITTAIN: Typo.

MR. YAUSSY: Oh, okay.

CHAIR: There you go. That's the kind of input we need for sure.

MR. BRITTAIN: Nice catch.

MR. YAUSSEY: I'm a newbie, so I wanted to make sure that it is understood. Thanks.

CHAIR: Good to show you're keeping up, Dave.

Okay. So that change is saved. Okay. So if we want to do --- wait. Was there any other comment on this flowchart before we look at something else, on the flowchart itself? I like your t-shirt today, Larry. Is that some kind of deer?

MR. HARRIS: It's a guerro negro t-shirt from last --- late February where we floated with the whales off the baja.

CHAIR: That's awesome.

MR. HARRIS: Yeah. So this is a lagoon where the whales come to have their babies and mate

sometimes.

CHAIR: That's beautiful.

MR. HARRIS: You can actually touch them. And that's the t-shirt. So I went and I got the t-shirt.

CHAIR: And memories from last February are so precious, aren't they? Like when you see them pop up, it's just almost overwhelming what we --- how different life was just one year ago. So I'm glad you got the t-shirt.

MR. HARRIS: Yeah. And didn't get sick.

MR. MANDIROLA: Laura?

CHAIR: Yes, Scott.

MR. MANDIROLA: This is Scott. I apologize. I've been on the phone with the legislature for the last 15 minutes. You're moving on from the chart. Can I ask without having --- forcing everybody to listen again, what's the upshot of moving on from the table? Have we come to some agreement on the approach with the table?

CHAIR: The table, as in the spreadsheet?

MR. MANDIROLA: The flowchart. I apologize.

CHAIR: So you missed some of our conversations. So ---.

MR. MANDIROLA: That's what I'm saying. I apologize. I don't want to rehash everything ---.

CHAIR: I know you know --- I know you got all the e-mails, so you know that Jennie finished the flow chart several weeks ago. And Autumn sent us a flow chart also. And we had some revisions made. Autumn made some revisions yesterday to their flow chart. And Ross and I were talking yesterday. And Ross put together this version of a flowchart which we feels combines a lot of the concerns of everyone. And we were hoping this is a flowchart that we could agree on.

One of the main differences is it starts out asking is there a tox value in IRIS, rather than referring specifically to 2015 or specifically the 2015 updates. So the thing ---.

MR. MANDIROLA: So let me cut to the chase. So are we going to --- are people generally --- believe they're in agreement, they're going to take time to look at it and then get back to everybody or where are we at?

CHAIR: That's --- I was just asking if everyone has any fundamental problems with the flowchart. And we've kind of discussed --- I think Jennie said she's okay with the tier II and tier III being separated. And

I believe Autumn that said that they're okay with referring specifically to a tox value in IRIS rather than a specific date, because this flowchart allows for future criteria to be run through it, criteria, you know, anything to be run through this, whether there are changes made in the future or not.

So I think that we might be close to having an agreement on the use of this flowchart. But I think everybody wants to see how the criteria play out with it.

MS. ROSSER: We're going to run some numbers and do some side by side, I think.

MR. MANDIROLA: Okay.

MS. ROSSER: The only --- you know, the only general question I have is I want to be sure like that we need to handle this assessment. I guess --- you know, Ross --- Ross is not going to be around forever. I hope he gets to retire someday.

CHAIR: Okay.

Ross isn't going to be around forever and Ross doesn't work for us. He does work at DEP, but he has a whole other job to do. That's why he was sketching this out on his couch last night.

MS. ROSSER: He identified --- if I

understood you right, Ross, he's really the only one in the agency who can do that kind of assessment that we're putting in this.

MR. MANDIROLA: Right. I mean, I will say before Ross came on board, we had a --- there was a previous toxicologist. He unfortunately passed away. And in the interim, we did have some toxicology work done. We contracted out some toxicology work to a toxicologist. So although we may not have one on staff, we to some degree have the ability to contract some of that work out of DEP. But that's not ideal. I mean, ideal would be having Ross on staff and helping us with this is ideal.

MR. BRITTAIN: Yeah. And I would add to that, I would suggest you either contract it out or have myself do it. And I can work it into my schedule, I'm pretty sure. But then you have --- if I do it, you have --- you contract it out for a review. Or if you have it contracted out for them to do it, then you give it to me to review, one or the other. You need a second set of eyes on it.

MR. MANDIROLA: And I know Ross' boss, so I'll have a conversation with him and see if I can borrow him for occasionally. I'm sorry to rehash that. I

just ---.

CHAIR: No, I think it's really helpful ---.

MR. MANDIROLA: We'll bring it up over at the capitol apparently. So there's a lot of inquiries happening this morning.

CHAIR: Don't worry about us. We're good. Go ahead, Jennie.

MS. HENTHORN: I was just going to say that I hadn't spent much time with CompTox before Ross sent --- sent us the link. And I was surprised at how user friendly it is. I mean, it’s like here's your tier II values. This is the rating on those. Here's your confidence rating. Here are your tier III values. Here's the confidence rating. I mean, it's --- it's really an informative tool. And you can see the tier III values against each other. And I was surprised, I actually picked the chemical and went through that process. And I was surprised at how informative it was.

And I was also surprised for the particular chemical I picked, how close those tier III values were. It was probably just a coincidence that they were all --- it was all the same order of magnitude, the numbers were just slightly different. So, you know,

it may be one of those things that --- for some of it, if there was a tier II value that is perfectly clear and --- one of the --- the only thing I was thinking about as we were looking at this, is does the tier II value have a higher confidence rating than the IRIS value? What if it's equal? If it's equal --- if it's newer, it still maybe you would want to use the tier II. So that was the only other question. I didn't like that there wasn't an out there. That it had an equal confidence rating, it may be that you would still want to use the tier II value.

MR. BRITTAIN: That's where the --- looking into the details of the methodology is going to determine what --- which one is really better than the other.

MS. HENTHORN: Yeah. Right now, the way the flowchart reads is it has to be higher to use it. So if it's equal, you know, then we may want to try to come up with something to evaluate there.

MR. BRITTAIN: Sure. Good. Fair point on that, Jennie. And we can --- we can tweak that a little bit. You know, and you ---.

CHAIR: And that's a good point.

MR. BRITTAIN: I'm glad you got into

CompTox and took a look at that and saw that. I mean, you can tell by looking at that, from our standpoint, with EPA and everybody, this is not our first rodeo in dealing with this exact question that we're dealing with on human health criteria. That's a great resource for that kind of information.

CHAIR: Right. And that's good to know because we're --- I think our next --- after we move --- after we agree on this and finish looking through how this flowchart will work, we're going to want to move on to a similar flowchart --- flowchart for bioaccumulation factor, which will involve ComTox. Again, it's going to lead to that same issue that EPA is going to have with well, you know, how much do we trust the states to make this decision on their own between these values. But if --- Angie, was there something? I felt like you might have popped in and wanted to say something.

MS. ROSSER: I said it.

CHAIR: Okay.

MS. ROSSER: Make sure DEP would have the capacity to be able to use --- again, you know, my general concern is just doing EPA's job and then hearing, you know ---.

CHAIR: Right. Well, we can always --- I

mean, we can always --- if we aren't able to do it, you know, say, well, we can't update it right now then. You know, we can't --- we can't make a change right now if we lead to an area that we aren't able to do. But I think like Scott said, we can figure out a way to ---.

MS. ROSSER: I'm not --- I don't know if this is what you're saying, but I think I --- back to my concern of the past meetings, we can't do nothing for 30 years either.

CHAIR: Right. Well, then in part, doing EPA's job as --- as you stated it, in part, doing that is what we're trying to do. We --- we have --- you know, we did have a discussion with them and they talked about how difficult it was for them to make additional revisions, and how they don't have any, you know, major plans to look at these again, because they just did it, even though things change --- so the states can either accept what EPA put out, which some states do, or they can refuse to make any changes, which some states do, or they can kind of do what we're doing here and what --- I know Delaware to some extent is doing with their bioaccumulation factors at least, and trying to do some of that work on our own.

And I think that that effort would go a long way with them, too. They understand that we're trying to do,

you know, the most scientific work we can do to find the best values. And we wouldn't use decisions willy nilly. We would --- we would employ Ross and the second opinion or some other toxicologist if he's not available.

MR. HARRIS: I have a question. You talked about another flowchart you're going to do on bioaccumulation. But this one here, I mean, isn't the whole purpose of doing these flowcharts to see what the outcome is, if you're --- take your compound through this or five compounds through this flowchart, and see how does it change the standard that we currently have compared to what this shows you?

CHAIR: Yes.

MR. HARRIS: I think that's what Angie was talking about.

CHAIR: Yeah. And we're going to do that next. We have a --- we have a spreadsheet that will show how these move through the flowchart. And also relative to what EPA used in 2015. So if we feel like generally we're good with this flowchart for now --- and I added on that little --- that question that Jennie mentioned there, which seems like we might need a connection there, we can move on to looking at that, if you guys are ready.

Okay.

I'm going to stop my screen share. I need to open this. Chris, do you have that spreadsheet open?

MR. SMITH: Yes, I do.

CHAIR: Okay.

Do you want to share it and we can go through it? I need to --- there. You should be able to do it now.

MR. SMITH: Okay. All right. Let's see. It's this one. Okay.

Can you see it there?

CHAIR: Yes.

MR. SMITH: Okay.

I have been working on multiple spreadsheets. And I tried to make this as unconfusing as possible. So I tried to condense it down as much as I could.

We can just kind of run through this. You'll see I still have this part in here about less than five years old IRIS values which it sounds like we've kind of changed that to just more recent. So you can ignore that at this point.

Okay.

So just going through each one of these one by one, 12.4 of benzine, yes, there is an IRIS value, but there is a more recent AS --- ATSDR value that EPA actually used in their 2015 calculation. So you'll notice that some

of these things are highlighted in yellow over here. And that's where the EPA 2015 decision provisions match our flowchart decision. So in this particular case, there was a tier III source that was more recent than the IRIS value. And EPA chose to accept that in their calculation for that standard. So does this ---?

CHAIR: So basically --- yeah, so basically what this --- what this means is that EPA --- EPA's decision is in column D, the one that's grayed out or grayed. So that's what they actually used. And then our decision is here at the end, in columns H and I. And wherever we said yes, and it also matched what EPA did, we've marked that in yellow. So you can see which ones play out there that, for sure --- it's as if EPA had our flowchart and they ran it through. And in many cases, came to the same conclusion that we would have if we were to use that flowchart.

MR. SMITH: In this case, I could not identify any other tier II or tier III toxicity value sources. You'll see --- as we go down this chart, you'll see that there are some where there are other potential sources that could --- that could maybe be used.

CHAIR: And can we look at the bottom of this, Chris, where we have the benzo(a)pyrenes?

Okay.

So these are the ones that we're pretty familiar with because we've had a whole --- a whole lesson on them. But the benzo(a)pyrenes are the one for which there is an updated IRIS value.

So in the gray box, you can see that EPA did not use the most current IRIS value because they didn't have it at that time, but we had it now. So our decision would be at the end. And what is --- column I is use the IRIS value. So we would use that, which would be different than what EPA did. But it's an updated value. So does that make sense to everyone, too?

Chris, could you lock that top --- or freeze that top row so that we can see that as we scroll down?

MR. SMITH: I forget how to do that. I've frozen the first column here, but how do you do both at the same time?

CHAIR: Oh, to do both at the same time, you would click in cell 3 --- or B3, where it says yes there. And you'd freeze it from there. And then it freezes the row and the column.

MR. SMITH: How do you do that?

CHAIR: Go up to freeze panes and unfreeze and then freeze again. That should work.

MR. SMITH: I was actually trying to do that

earlier and I forgot how to do that.

CHAIR: So when we look at these, the good news is they're a bunch of yellow boxes. The other news is there are a bunch of questions. So you'll see in column G we have questions. And then in the notes column, Chris has identified what those questions really are.

Like let's look ethylbenzene, because that's one that we talked about last meeting. And we still have that same question.

So for ethylbenzene, you can see in column D that EPA used Health Canada 2015, which is an RFD, which means they consider it as a non-carcinogen for their --- for their decision-making purposes. Yet you'll see that there is a tier III tox value from CalEPA 2011 that gives us a cancer slope factor.

So we talked --- we spent some time last month talking about ethylbenzene and whether it's a carcinogen or not. It is apparently a proven carcinogen for animals, but that hasn't been correlated to humans for some reason, because that's pretty much how they correlate cancer to humans, I believe. But it hasn't been specified that for specifically ethylbenzene, it's specifically a human carcinogen. Except for CalEPA does have a cancer sloping factor that they developed for it.

So in cases like this, we would be left with this question. This is where we would have to delve and do more work. Do you want to speak to that, Ross, or anyone, about what that means?

MR. BRITTAIN: Yeah. I just --- we went over last time, you know, the reasons why ethylbenzene hasn't been designated by the EPA as a human carcinogen in that they can't tease it out from the other petroleum known carcinogens like benzene and toluene and xylene that --- that it's always associated with. And in order to do that would take a lot more money, EPA at this point has just chosen that it's a lower priority for them to do that further assessment of --- specifically for ethylbenzene.

So what I would suggest at this point is a deep dive on the --- the development of the cancer slope factor from CalEPA. And as long as they were following sound toxicological methodologies, that it should be accepted. And I know that, for example, on the remediation superfund side of things, everybody in the EPA and all the other states, we already --- we all accept that CalEPA cancer slope factor.

And I found that interesting that the water folks, the water side of EPA chose not to use it, but the superfund and brownfield side of EPA chose to. So if there's a discrepancy within EPA, it's --- and that's just going to

be --- that's one that I would suggest a deeper review of.

CHAIR: And it would be a good question for EPA, too, like --- because this is information they had when they were making the decisions in 2015.

MR. BRITTAIN: Exactly.

CHAIR: Unlike benzo(a)pyrene, they didn't really have that information. They had this and they decided to use Health Canada 2015. So if we could talk to the right person there --- which we had the right person back in October, but we didn't have this question then, that would be the kind of --- a good question.

So we have similar questions that are a little probably less formed than the one for ethylbenzene, but we have these questions noted in this notes column. And it's basically each time that there might be --- there is something more recent --- let's look at the 2 4 6-trichlorophenol, that's the first question row. EPA used this 2007 --- that's a tier II determination, but it looks like there is a more recent --- well, there's a more recent tier III tox value.

MR. BRITTAIN: Yeah. This is another case where EPA used the non-cancer calculation using the RFD, but California EPA has established a cancer slope factor for it. So this is a --- this is similar to

ethylbenzene. So we would have to determine are we going to go with what EPA did or are we going to pursue the use of the cancer slope factor like California EPA?

CHAIR: Correct.

But how about all of these yellow yesses? That's pretty cool, right? I don't know if they add up to 18, like Jennie, I think we had 18 before.

MR. BRITTAIN: They do. I checked.

CHAIR: Okay. Okay.

So this is the same thing that Jennie did for us a month ago really, before we had a flowchart. But we weren't --- now we're able to more visualize how it --- how it works.

MR. SMITH: Right. Like for the next three here, 2 4 9-chlorophenol, chloromethane, azomethine, I was not able to find any tier II or tier III toxicity values. And so the EPA apparently could not either, because they used the IRIS values that were available at the time. And then we get down to --- I'm sorry --- I'm sorry, Aldrin here, we did find an RFD and a tier III with ATSDR. However, that compound is considered a carcinogen. And so at this point I would assume that we would stick with the IRIS value and the IRIS CSM value, continue to use that. Then we get

down ---.

MR. BRITTAIN: Hold on there for a second, Chris. What you should be doing is choosing your best cancer slope factor, your best RFD, and comparing the two, you know, calculating what --- how they would impact the human health criteria, and then comparing the two in the lowest --- whichever one is lowest is the one that should be chosen, because it's the most protective.

So that should be --- I don't want to just dismiss those RFDs when you have both the cancer slope factor and an RFD. You should be choosing the best one from each type. And then developing from there.

MR. SMITH: Okay.

MR. BRITTAIN: Sorry about that.

MR. SMITH: No, no, no.

MS. CROWE: Let's modify the flowchart to make that clear, because I don't know that that is clear in the flowchart. We just talk about, you know, cancer slope factor or a referenced dose. But I think it's somewhere in the chart, it should be made clear that if there's both, then we run it through the calculation and pick the one that's most conservative.

CHAIR: Right. I think Ross notes at the top of the chart that we would run this chart for cancer

slope factor, we would run it for what we have for RFD, and then I think then what --- we would need the notation that would say then we compare those two.

MR. BRITTAIN: Yeah. That could be like an appendix at the bottom as far as I'm concerned. Make note as to what you do with it once you pick these values.

MS. HENTHORN: So I went back to the calculation spreadsheet. And EPA on Aldrin did actually include the reference dose of .000 --- however many zeroes and three. And it was just that the cancer slope factor yielded a more conservative result. So they did, in their table, include that reference dose.

MR. BRITTAIN: Yeah. That's the ---.

MS. HENTHORN: Yeah. So in --- you know, the calculation spreadsheet that I have up and running has both verses in there. And it selects the most sensitive.

CHAIR: Right. And because that's standard procedure for EPA, too, they would go through and --- I mean, it's basically like if you look at it and realistically there's a --- there might be a study where, you know, they have to --- they have rats that, you know, when they get exposed to high doses to this chemical,

they may have kidney failure, which is not the same thing as cancer, but it's --- but the dose for that kidney failure is more --- is lower than what it would have caused --- what would have caused cancer. So it's not saying it's not a carcinogen, but it is a carcinogen. But the --- the response from the --- from the rat was more --- more the --- the cancer response is worse.

MS. HENTHORN: Yes.

MR. SMITH: That may have been why I actually had that checked, because I did look through each one of these documents for each of these compounds. And when there is an RFD and a CSF available, EPA calculated both. And obviously went with the more stringent of the two.

So we looked at Alpha-BHC, we see that California EPA has a cancer slope factor established for this one. So we need to determine there, is that more appropriate than the IRIS value, that EPA used the IRIS value in calculation.

Now, for anthracene, I was not able to find any additional tier II or tier III toxicity values. The EPA used the IRIS value. And then we get down to beta-BHC, same situation. California EPA has a cancer slope factor established. We need to figure out is that

more appropriate than the IRIS cancer slope factor that the EPA used in the calculation.

And the same with bis(2-ethylhexyl)phthalate, it's the same situation.

And then for butyl benzo phthalate (sic), EPA used a tier II source for their calculation. And apparently there's this Health Canada tier III source that's available, too, so we need to look at that and see which is most appropriate and compare those two.

And let's see, for chlordane ---.

CHAIR: Now, would we compare those two or is that comparing a tier II to a tier III?

MR. SMITH: Yeah, it ---.

CHAIR: I feel like in our flowchart, if there was a tier II, that looks like a tier II is more recent than the Health Canada 2000, wouldn't we go with the tier II in that case? According to our flowchart, no. And Chris was putting this together throughout the week and the flowchart was changing like every hour or so.

MR. BRITTAIN: Yeah. That is more like --- if you have a more recent tier II, it should be chosen. It's going to go under more stringent review.

CHAIR: Does that make sense to everybody,

when we're looking at this, that we might not have a question there, because when we look --- when we put this through our current version of the flowchart, we would go with the tier II in that case, which turns out that's also what EPA did?

MS. HENTHORN: That makes sense to me.

MR. SMITH: Okay.

For chlordane, CalEPA has a different cancer slope factor than IRIS, but there's also this ATSDR reference dose, so once again we need to figure out which is the most appropriate there.

For the next 2-chlorobenzene cyanide, there was no additional tier II or tier III toxicity information that we could find. So IRIS --- or EPA went with IRIS. And we would follow the same path there.

For DDT and Dieldrin, both of these are carcinogens, but there are RFDs in ATSDR, so like Ross was discussing earlier, we would need to make the comparison there and see which is more stringent. And I believe on both of these, that the cancer slope factor should be. So at that point, we would continue to go with the IRIS cancer slope factor.

For diethyl phthalate, I didn't find any tier II or tier III sources, so we would go with IRIS on

that. The same thing with dimethyl phthalate. I wasn't able to find any tier II or tier III sources. EPA used this 1980 assessment for their calculation. So, you know, not finding any additional information, I would assume it would go to that as well.

Dibutyl phthalate, the EPA used IRIS. I wasn't able to find any tier II or tier III values, so we would go with IRIS with that one as well.

CHAIR: Hey, Chris, for the remainder of these, let's skip over the ones that we don't have a tier II or tier III for. Those are all the same. But thank you.

So then we talked about ethylbenzene.

MR. SMITH: Yes.

CHAIR: We definitely have a question there.

MR. SMITH: And then for gamma-BHC, that would be kind of the same question as ethylbenzene, I assume, because IRIS has an RFD value which EPA used --- actually, EPA used this OPP RED 2002 for calculation. But California EPA also has a cancer slope factor for this one. And then there's this other source here as well. So once again, we need to determine which is most appropriate for that one.

MR. BRITTAIN: Yeah. And in that particular case, IRIS doesn't have a cancer slope factor for it because if IRIS --- at the time that IRIS reviewed this particular compound, it was not sure if it was cancer causing carcinogenic. But since IRIS was developed, ICEA has established that it is. It's related to a cause of non-Hodgkin's lymphoma in humans. And IRIS just hasn't updated that particular review yet. But CalEPA took that information and said well, we'll go ahead and establish a cancer flow factor for it now that ICEA has --- has determined it is a human carcinogen. So that's the difference. That's just --- and IRIS probably is not even going to review this because that chemical has been banned for its primary use in agriculture. It's only used in --- for pharmaceuticals now and only limited amounts in that particular case.

So that's the reason why I would suggest, in this particular case, the cancer slope factor should be used. But we, of course, can have a secondary opinion on that as well.

MR. SMITH: Thank you. And then for heptachlor, there is an IRIS value, but EPA chose to use the CalEPA 1999 cancer slope factor, which I wasn't able to find to find any additional --- any additional tier II

or tier III sources for that. So at this point, I would assume we would also use the approach that EPA did, using the CalEPA cancer slope factor.

For hexachlorobenzene, EPA used the OPP 2008 value. There is --- I did find a CalEPA 2009 value. So I think this is one we'll have to determine which is most appropriate for.

For methoxychlor, there is an IRIS value that EPA chose the CalEPA 2010 value. And not finding any additional tier II or tier III information, I would presume that we're going to use that value as well, the CalEPA 2010.

And then for methyl bromide, EPA used this OPP 2006 value. I wasn't able to find any additional tier II or tier III information there. So that would follow to use that value as well for our calculation.

And then pentachlorophenol, EPA used the IRIS value for that, but there is a CalEPA cancer slope factor and an ATSDR reference dose. So once again, we need to figure out which one is the most appropriate there.

And then we've already --- well, pyrene, I wasn't able to find any additional information there. And then we've already discussed these PAH's that have

the new IRIS value that was not available when EPA did the 2015 calculations.

So ---

MR. BRITTAIN: Hey, Chris.

MR. SMITH: Yes.

MR. BRITTAIN: On methyl bromide, I was able to find an IRIS RFD value on methyl bromide, a value of .0014. So we'll have to check that out, too.

MR. SMITH: Actually, yeah, I think I had that one of my other spreadsheets.

MR. BRITTAIN: Yeah.

MR. SMITH: Like I said, I had multiple. And there were some that I was working on that just were getting way too confusing. I was trying to condense this down as much as possible to where it would make sense, but I do remember --- I do remember you saying that. And one of the comments that you made on one of my spreadsheets, I definitely remember seeing that. So thank you for reminding me of that, that I didn't include that here.

MR. BRITTAIN: Yeah. Welcome to my world.

MR. SMITH: I also have another version of this spreadsheet that shows the years that the IRIS values were updated. But I don't --- we probably don't

need to look at that at this point because all of these --- all of these sources that EPA used in their 2015 criteria are more recent than those IRIS values anyway. So I don't --- we probably don't need to see the actual years of the IRIS updates at this point. But I do have that information if you need to see it.

MR. BRITTAIN: You know, based on this, I would propose those things you got highlighted in yellow, that those are things that I think we could reach consensus on right now. And then the things with a question mark are the things that we'll have to look into in more detail and circle back with the group later.

MR. SMITH: Should I go ahead and put Aldrin back in as a yes since EPA did calculate all --- well, I'm not sure it's referenced, those they used in their calculation. Jennie, you said you have a spreadsheet that runs this calculation. Do you know if this is the reference dose that is used in that calculation?

MR. BRITTAIN: It should be. There's only two reference doses. One from IRIS and one from ATSDR. They both are the same value.

MR. SMITH: Okay.

MS. HENTHORN: Yes. Yeah. Okay.

MR. SMITH: So actually ---.

MS. HENTHORN: Yeah, I've got it up right now.

MR. SMITH: Okay.

I'm going to go ahead and put this one back in as yes, to go ahead and use the IRIS value, since that's the more conservative of the cancer value versus the non-cancer value.

MS. HENTHORN: But I think in a way, they did use both. So they just then selected the more restrictive criteria. So it's truly a yes, they used that ATSDR value also.

MR. SMITH: So on the remainder of these that I have a question mark on, Ross, do you agree that these are the ones that we need to look into more or are there any of these that you think that we could go ahead and go with now or do you think about all these we'll need a little more research?

MR. BRITTAIN: I think that they need a little more research. As we went through them, I didn't --- I didn't see any that really stood out as --- that were good to go. I think it will be good to take a look at each of them. But the others I think that the tox values are good to go, the ones that are in yellow.

MR. SMITH: Would we like to discuss those any further, the ones highlighted in yellow, or is this something that we can potentially get consensus on now or do we need more time to review these?

MS. CROWE: I know I was looking at DDT, because I was surprised that that one was weakened considering that it's, you know, one of the dirty dozen and banned. And when I looked at it, I --- where was that one? Yeah. I saw that the ATSDR had a newer reference dose. But I think that one, the flip factor was more of the determining criteria that changed the calculation.

And I couldn't find a more recent cancer slope factor.

MR. BRITTAIN: Yeah, the cancer slope factor for that one is CalEPA. And again, it's --- since it’s been banned, IRIS isn't going to look at the cancer slope factor. It's very similar to what is going on with the gamma BHC. They're not going to go back and review it. They have too many other things to deal with, higher priority, that they're not going to get back to that. So I would agree that the cancer slope factor from CalEPA would be the one use from the cancer side of things.

CHAIR: Can you guys hear me?

MR. SMITH: Yes.

CHAIR: Awesome. I don't know why, but my headphones just stopped working and nobody could hear me and I couldn't hear anything. So I think now might be a good time for us to sort of talk about our feelings as far as this goes. Are we good with --- do we feel like that this spreadsheet adequately uses our flowchart? Do we feel like the flowchart is right? And as far as making decisions on toxicity, do we feel like these that are highlighted in yellow would be ones we could move forward with?

MS. CROWE: Well, I just expressed concerns about the DDT. And Ross, you were saying that there was a newer cancer slope factor with CalEPA?

MR. BRITTAIN: Well, I don't know if it's newer off the top of my head. But it's actually the same as IRIS actually.

MS. CROWE: Oh. Is it the same?

MR. SMITH: Yeah. There are --- I'm glad you mentioned that, because there are some cases with a peer --- these compounds where California EPA's cancer slope factor is identical to the one in IRIS. And I just --- I left that off, because I didn't see any --- any need to repeat that since they're exactly the same.

CHAIR: So what about the --- what about coming to an agreement then on all of those yellow ones except for DDT because we have further questions there?

MR. BRITTAIN: Well, DDT, they actually used a cancer slope factor from IRIS and CalEPA to develop criterias. That was just an additional RFD that Chris had mentioned in there. But there is a cancer slope factor from CalEPA. That would be all in the notes. That would be all contained in the --- otherwise it shouldn't be, yes.

CHAIR: Does that make sense, Autumn?

MS. CROWE: Yeah. Maybe that's why I couldn't find it. I still don't understand why if they would chose to weaken it if it's so toxic.

CHAIR: Well, they're trying to protect --- I mean, for all of these, they're trying to design criteria that are protective. And protective given the one in a million expectation of a possible negative outcome. So using the data they have to get to that --- that number.

So we're all good then? We can just move forward without the yellow yesses?

MR. BRITTAIN: Or do people want time to, you know, think about it for a day or two? Sleep on it,

so to speak?

CHAIR: Thanks, Ross.

MS. CROWE: Are these all of the --- are these the same 18 that we talked about last time?

MR. SMITH: Yes. As far as I know. Because these are --- everything --- let me see here.

CHAIR: Chris, if you sorted these by column G, that would put all of the question marks at the top. Don't select it like that, because that will just --- just select somewhere in the spreadsheet and then go to sort data at the top --- or yeah, there, sort to A to Z. We got that --- never mind. But just eyeballing them, do the 18, does it --- do we have the same 18 that Jennie had before?

MR. SMITH: I believe so. All of these are ---.

CHAIR: Although I think gamma-BHC was one of --- I have gamma-BHC marked as yes.

MR. SMITH: No.

CHAIR: I think that gamma-BHC was one of the 18 that Jennie had before. Oh, Angie lost Internet connection. I need to let her in.

MR. SMITH: So that would be if we continued to calculate gamma-BHC as a non-carcinogen.

But if we changed it to a carcinogen, then it wouldn't be included in the yes at this point.

But all of the --- all of the highlighted --- all the ones marked yes match EPA's 2015 recommended criteria, except for --- except for these PAH's that have the new IRIS value that EPA did not use in their 2015 calculation.

MR. BRITTAIN: Yeah. And that's a critical distinction we need to make sure everybody is aware of in terms of the yellows, in terms of what number we agree with and things that are in yellow and yes, that's just for the toxicity value, not for the human health criteria, which do we accept the toxicity value that was used? Then, of course, we can get into the BAS, the other stuff from there.

MR. SMITH: Good point. Yeah, that's a good point, to bring that up. So this is just for the RFDs and CSFs.

CHAIR: All right.

So maybe we can move on from here and ruminate on these for a few days and try to maybe communicate in the meantime.

MR. BRITTAIN: E-mail.

MS. CROWE: Can we get a copy of the

spreadsheet?

MR. SMITH: Absolutely. I can send that to you.

CHAIR: All right.

So do we have any more discussion based on this flowchart or the spreadsheet we were just looking at before we move on to talk about next meeting and next meetings and after our meetings?

MR. HARRIS: I'm wondering, how are we going to deal with deciding those non-yellow on toxicity factors? How do we do that?

CHAIR: Right. So that's the part of our decision tree that's more complicated. And we'll have to look into the methodology of those studies to decide whether --- whether we feel like they're better than the tox numbers that EPA used. So they kind of appear in that middle section of our flowchart where --- I'll share that again.

MS. CROWE: Are there any toxicologists at some of our universities that we could maybe reach out to and see if they have grad students or something that could help with that research, so that's not all on Ross?

CHAIR: Yeah. And even also we need --- we would need a second opinion, yeah.

MR. BRITTAIN: Yeah. Yeah. So there's either --- you know, the universities do have toxicologists that we can refer to if we're looking at that. We can also --- so WVU I know has some toxicologists. You can also --- and again, the question is whether or not they'd be willing to do it pro bono. That could be an advantage. Or we can contact --- there's lots of consulting companies out there who have toxicologists on staff. Like --- so like, you know, the last --- the latest update to the de minimus table, whenever we do a de minimus table update. You know, I'll be working on it and I send it to off to a contractor who --- who risks toxicologists and have them review it to make sure I did it appropriately.

So it's a pretty common standard practice. But that is contract, so it costs money to need to be able to do that.

MS. ROSSER: How much money? How much money, Ross? This is Angie on the phone now. Do you have a sense of that?

MR. BRITTAIN: I wasn't in charge of that --- that particular budget. So I can't say off the top of my head or exactly. But off the top of my head, it would be somewhere probably in the $20,000 to $30,000

range for --- well, that's for the de minimus table. That's a much bigger review. For this kind of review, I would think something in for --- you should be able to do it for around $10,000 for, you know, the ten chemicals or so that we would need to ---.

MS. ROSSER: Yeah. I guess I'm just --- yeah. I'm still thinking long term. I mean, this --- I guess the two general concerns I have just starting to digest the --- what we looked at today is --- back to like EPA --- so it's not doing EPA's job for them, that the taxpayers already paid them to do. And here's more money that we'll have to spend and stake to do what we --- I mean, where does that money come from? And maybe not a lot in the big scope of things, but is it Clean Water Act money?

You know, I'm just kind of thinking through the --- that piece and what Laura related at the top of the call, that, you know, EPA didn't sound like they were that committal in terms of --- if they're receptive to what we're doing here. And I --- Chris, did your --- did your work go as far to look at values? Like I'm curious, if we --- if you went as far as to look at where our decision tree would result in a value that is pretty far off the mark of the 2015 EPA recommended

criteria.

Did you take it that far?

MR. SMITH: No, I didn't.

MR. BRITTAIN: That's because it was changing every hour.

Right, Chris?

MR. SMITH: That's because what?

MR. BRITTAIN: Because it was changing every hour.

MR. SMITH: Oh, yeah. I mean, I certainly could, but I have not yet at this point.

MS. ROSSER: Yeah. Yeah. I am just, you know, thinking ahead to --- if we're way off the mark, I mean certainly if they become more stringent, there usually isn't a problem there. But if they become significantly less stringent then EPA's current recommended criteria, that might get, you know, their attention. So I don't know. You all have been dealing with this ---.

CHAIR: Our goal here, though, is to develop science-based standards that are protective. And when we talk about stringency and whether it gets more or less stringent, that's more of a policy concern where we're really trying to get it to get it to numbers here

that are science based and protective. So --- and that's why it's not in these spreadsheets specifically.

MS. ROSSER: Yeah. I just --- I don't know if these are these right --- yeah, I hear you, Laura, but --- I hear you.

MR. BRITTAIN: I think that we'll just have to make --- if we --- it's kind of one of those things where it would be a case-by-case basis in terms of, you know, cross that bridge when you get to it type of thing. If we come up with a number that we think is better, more sound, and it's different than what EPA has recommended or chosen, then we're just going to have to make the case to EPA and see how it goes from there. And then adjust from whatever --- however EPA responds.

CHAIR: I'm confident that we can make that case to them and have that discussion with them. I think they just want to make sure that we're not just going willy nilly ---

MR. BRITTAIN: Yeah.

CHAIR: --- just because, you know, they had a favorable result or whatever. I think that's getting above a basis of our process and what we're going through to get --- to get to an end result. It would be --- it would be defensible to them, which we would defend

when we pass the criterion and then submit it to them with our whole analysis of what we did. I didn't want to talk about it up front.

MS. ROSSER: Yeah. Yes. That can be done more on the up front before, you know, the DEP is losing $10,000 or $20,000 more to this project. That would be a good idea.

CHAIR: Right. And a lot of our --- as far as budgetary concerns, a lot of our funding comes directly from EPA to do, you know, water quality standards work. So if it's --- in many ways, it is --- it's federal money that is funneled through states to ensure that they do these --- you know, that they keep their water quality standards up to date. So it's not just state general revenue that we're talking about.

MR. BRITTAIN: And really I think that right now, as I look through it, there's only one or two chemicals that I think that may have an issue, ethylbenzene being one of them. We're using a different value than what EPA has and may have some questions about, you know. That would be the only one that I really look at. Maybe the gamma-BHC as well. But that's it. The others, I think they're going to go through with this. We'll end up agreeing with what EPA did.

CHAIR: Okay.

I'm going to take the flowchart down because it's kind of taking over the whole screen. So we have a half hour left. And I wanted to talk about what we're going to do between now and the March meeting, what we're going to talk about in the March meeting. Briefly talk about the remaining two meetings after that.

So it seems like if in the near term, we can --- we can agree that this flowchart works for us, and that the question marks we have work for us and, therefore, that the boxes that we marked in yellow after we all have a chance to ruminate over that spreadsheet work, then we might have some agreement on many --- many chemicals that we can move forward with as far as their tox value.

But the other thing that we need to consider is their bioaccumulation factor values. And I know this is something that Jenny had a lot of concerns about from, you know, from even a couple of years ago, had started doing some research into how those were --- how those were used and how old that data may be and that there's new data. She's done some work in the near term, working --- looking at the ComTox database. And it's things --- I feel like we need a flowchart similar to the

one that we just developed for bioaccumulation factor. And I'm hoping that when we get to the March meeting, we can start it off a lot like we started this one, where we have a flowchart or a few flowcharts to look at that we've talked about in the meantime, that have been developed in the meantime, and that we can come to a consensus on. And it might be that it's more complex than this, hopefully not, but we'll see --- we'll see what we come up with. Does that seem to make sense to everyone as far as the next step?

MR. YAUSSY: It does. Laura, I apologize. I have to drop off. But I'm going to say I thought that was a great --- the nature of today's meeting was to have something to be working from as we get --- I hope we can do that again in future meetings.

CHAIR: Yeah. Right. Thank you.

So does that make sense to everyone else that we would work from a flowchart that's been developed in the next few weeks at our next meeting?

MS. CROWE: Who is developing the flowchart?

MR. BRITTAIN: My next question.

CHAIR: I would say that we could start kind of like we did and have --- if it's okay with

Jennie, to have her start with one, since she's the --- run the most down this tunnel so far. And then we can see what we --- what we can come up with from there.

MS. HENTHORN: I can do that. It's going to be a lot tougher. We hit the low-hanging fruit with this one, guys. When you start looking at ComTox, a lot of the stuff in there is model data, it's not actually calculated by accumulation factors. It's modelled. So we can't just go to a data source like that. And it's going to be more labor intensive. So we'll --- I'll do what I can with it. But it's not going to be --- it's not going to be as easy.

MR. BRITTAIN: yeah. That was more on my first comments with BAF right from our first meeting. They're all modeled. We don't have data to BAF specifically. We have data on BCF for most of these compounds, but not BAF. So that's ---.

MS. HENTHORN: There's actually been a good number of studies that have been published on BAF. It's just that they haven't been incorporated by anybody into anything. You know, there's a Canadian guy who does a database, but he hasn't updated it since 2013. So even when he did that, he wasn't --- he wasn't looking for most of the modern BAF work. It's a problem. You know,

some of that work is really great. We just have to figure out what to do with it.

MR. BRITTAIN: Yeah. That's one of my concerns was when they decided to shift over to using BAF for human health criteria, I think they were kind of putting the cart before the horse a little bit. It's like they needed more solid data off BAF to do that. I agree with the concept, BAF are much better than BCS, but we just don't have good data on it yet. So I agree with you, Jennie, it's going to be --- it's going to be a tough one here in terms of getting good BAF values that we can rely on. Normally, under circumstances like this, for a risk assessment, I would say well, let's look at it from a sensitivity analysis, you know, do --- do a range of values. But we can't do that for human health criteria. We have to come up with one number. So how do we come up with that one number?

CHAIR: So given that this topic is going to be more complex, it might not be that it lends itself to do a flowchart that’s going to be manageable. Well, you'll notice what we did, last month we had a spreadsheet that almost came to the same conclusions of what we came to now, now that we have a flowchart and we have an additional spreadsheet.

So is it possible that instead of trying to develop a flowchart, which is pretty complicated --- I know all of you guys have been working on it, and Ross did a great job of boiling this one down and making it pretty simple at the end, but if that's not possible with a BAF, because it's a more complex issue, we might be better off to get a spreadsheet that we can all understand, rather than trying to go through a flowchart.

MS. HENTHORN: Part of it we can do on a flowchart, because there is some --- some of the part that is in EPA's process that I think is mandatory to us. So there is that hierarchy. Maybe there's a BAF. Use the BAF. If not, use the BCF. If not, then you use this. I think that part of that we can set up in a flowchart so that we have that in the back of our minds.

But answering that first question, is there a BAF? I think that's --- that's the part where it's trickier. How do you answer that question?

MR. BRITTAIN: It speaks to the quality. Yeah. You can have a BAF, but is it a good BAF? That's --- that's the question. I agree with you, Jennie.

CHAIR: Okay.

So we can endeavor to come --- to come to --- to put together this flowchart and accompanying

spreadsheet as soon --- as soon as we can and then start chatting about it and figuring out what we're going to land it on. And then by the March meeting, we'll be able to really get into it. Go ahead, Jennie.

MS. HENTHORN: I was just going to say, number one, I'm going to have to go let my springer outside. She's --- she's standing beside me, I'm petting her, and she's really wanting to go.

But number two, I might send you the spread --- the flowchart in chunks. So that --- so that we can --- we can see part of it. And then I'll just say I'm still working on this, if that helps everything at the end.

CHAIR: As we said, this is a workgroup. So we'll be prepared when we come to the meeting four weeks from now to work for our two hours.

MS. HENTHORN: Yes.

CHAIR: Okay.

So we'll do that next time. And hopefully we'll have time to really get through that and kind of have a good discussion about bioaccumulation factors. I hope it's not going to be so complex that we're going to kind of get marred into its detail, because then we have two meetings left after that. And the final meeting will

be in May. Let me just share this --- I want to share this. I think that's this one. I was going to say screen --- I'm sorry. So our May meeting will be a little --- it will be a little quick coming, too, because we need to have it in early May. So I wanted to talk a little bit about timeline.

This is the document that I shared with you all early --- early after the last meeting, where it was kind of playing out how we're going to plan our meetings going forward.

So by May, we're going to need to finalize our final consensus on these science-based standards to be able to submit them to the Secretary for consideration. So the rest of May, as I have shown here, Harold will have to consider these recommendations that we've made. And my big question mark here and this is mostly for Ed --- if you're listening there, Ed, normally the EPAC meeting happens in late June. But if --- for our timeline to work, we're going to propose criteria. And if we're going to get them to the EPAC to be able to look at them as a body, and also have time for everything else, it would need to be sooner in June, like much sooner in June.

Because if you look at this timeline here,

we have to have agency approved rules to the Secretary of State's Office by July 30th of this year. So if you back up from there and give us one week to respond to public comments, which is not really enough time, but I'm hoping that considering we've done all of this work, it might be a little bit easier than most years.

But that will give Chris and I one week to respond to public comments after our 45 days of public notice. And that's only if the public notice starts on June 7th.

So if the EPAC wants to be able to look at the rules like they do every June, and have --- have some say or review of our rule before it goes to public notice, it would need to be that very first week of June. So I'm just saying, you know, either that will be --- or the EPAC will be looking at our rule during the comment period.

MR. MAGUIRE: It's not cast --- it's not cast in concrete. We can schedule whatever it is that needs to be accommodated. Let me coordinate and make sure coordinate with Jason on it.

CHAIR: Okay.

MR. MAGUIRE: The earlier will be just fine, I'm sure.

CHAIR: That would be excellent. And this has been an issue in the past, too, where we need a 45-day public comment period. We have in the past had to put our rule out to public notice before the EPAC had a chance to look at it, which was always --- I didn't like that so much. They should be able to look at it and make comment, ask questions. And if anything needs to be revised, we should be able to do that before it would go out to public notice. That's how the other rules all pretty much go.

So that would be great if that could be --- that could be rescheduled.

MR. MAGUIRE: I'll coordinate with you and we'll make an announcement. Our next meeting, I think, is Thursday a week after next. And we'll just get it out there. I'm sure it won't be a problem.

CHAIR: All right.

So what else would we like to discuss? If we wanted to go backwards a little bit, because we have 20 minutes left now. And I wanted to --- I mean, that's kind of the end of what I needed to get across for now. So if we wanted to back up and talk about the bioaccumulation factors again for a few minutes or maybe future meetings.

Does anybody have any thoughts?

MS. CROWE: If we can come to a consensus on the toxicity values and the bioaccumulation factors, I'm wondering if we can use those decision trees that we developed to run the remainder of the 94 through, to be able to propose those to the Secretary in May as well.

CHAIR: Well, let's determine if we have a consensus on that flowchart first. And we already went through --- bring it back up there. As far as this flowchart goes, the one thing we need to add to it is that at the end, we can compare CSF and RFD and pick the more stringent of the two, because that's what EPA does and we would run this --- run these things through this chart and come to a conclusion there.

So we would come to a conclusion for cancer slope factor. We would come to it for reference dose. And then we would compare those two factors to decide which one is the one we would go with, which we've kind of done --- I mean, EPA has done in many cases already. But we would need to note that on our flowchart.

And then Jennie had this additional question about if the tier II was equal in confidence rating to IRIS --- and that was a good question, because

confidence rating isn't --- it's not like a number --- a number or something that changes, you know, it's not easy --- there's either high, medium, or low. So it's very likely that they would be equal in confidence rating because there's only three ratings. I think there are only three.

So we need to work that in there. But if we work those two things in, and we come to an agreement on this flowchart, and also the accompanying spreadsheet, that shows several criteria that we can --- that we would be okay with EPA's determination of toxicity.

Do we feel like we're at that place or we need more time on those?

MS. CROWE: I would want to do a side by side, just making sure that they come up with the same values. What would be really helpful is if we could incorporate the links to the databases into a document somewhere, because I had a lot of trouble just finding the databases. And I wasted a lot of time on just locating them. So if I had the links to all of the databases, and we could do --- like I could do a side-by-side comparison, just to make sure that they match, then I mean we would be ---.

CHAIR: We can add that into the flowchart

for sure. That would be easy to do. And once the flowchart is saved as a PDF, then those links would be there forever.

And then we also need to add this --- like a footnote somewhere that would say that we compared --- okay. So there's those ---. But once we have an agreement on the flowchart, there is no reason we couldn't run everything through it. But for ---.

MR. BRITTAIN: And I think that was the goal, was to have a flowchart that no matter what, for future rounds, future iterations of changes coming from EPA, you know, proposed human health criteria, et cetera, this could be --- we could get consensus on this. You can always use that flowchart no matter what. That was the goal, at least it seemed like that was what --- in talking with everybody, that's what we were trying to do with it.

In terms of the --- what if tier II has equal confidence rating to IRIS, then you know, any time you have equal confidence --- confidence rating, in my opinion, it should be use whichever one has the most up to date toxicity methodology.

Right?

If one has --- and if they're equal, then

you would go with --- I mean, like they're using the same methodology, that kind of thing, then you would go with the higher tier. All things being equal, you chose the value from the higher tier. That would be my thought process on that.

MS. HENTHORN: So what is newer, Ross? So tier II follows the same method as IRIS. And you have a newer tier II that the IRIS value is high confidence, the tier II value is high confidence. And they were both done with the same methodology, it's just the tier II method hasn't become an IRIS value, would you use the IRIS value or the tier II?

MR. BRITTAIN: Well, as long as they were using the same data as well. If there was new data included in the methodology, it would be a new study. Right. A new study came out and said that, you know, we had this new information on the toxicity. So whichever one was using that newer data would be used, if that was a difference. But yeah, if all things equal, they're using the same data and everything else, you go with the higher tier. You would use IRIS in that case. Because it's --- because of the more stringent review and the consensus that you get with IRIS.

Now, PPRTV, of course, is the same type of

review. But they just didn't reach a consensus for some reason. But anything that they reached consensus on in IRIS, that's the value that should be used as long as it's of the same --- same ages, used the same data, same methodology, and the same in confidence.

MS. HENTHORN: Okay.

So again, if the IRIS value is older than a tier II value with high confidence, would you use the tier II value with the higher confidence because it's in your data set?

MR. BRITTAIN: Yes.

MS. HENTHORN: So we would just need a way to work that into the chart?

MR. BRITTAIN: Yes.

CHAIR: So we'll work those things into the chart and send that to you. And we'll also send the prism spreadsheet to everyone so we can ruminate on those things and discuss them. In the meantime, please feel free to give us a call or give us an e-mail. We can set up a call with anyone who wants to discuss any of those things as we move forward.

And then Jennie --- thank you, Jennie, for being able to pop in and work on this BAF situation, the flowchart, and also the spreadsheet to go with it.

You'll get that to us whenever you can. And we'll start talking about that, too.

So we have a little bit of work to do between now and the March meeting, so that when we get there, we'll be ready to really talk about those.

Was there anything else that we want to --- that we feel like we haven't addressed as far as making decisions on these criteria, other than toxicity and bioaccumulation factor? I think we agreed in the past that we're good with the other parameters that are in the equation, the way that they were developed and decided upon by EPA. These are the two main things that we needed to look at in more detail.

Is that right?

Okay.

MS. HENTHORN: Are we on agreement on fish consumption?

CHAIR: I think that for things like fish consumption --- for fish consumption, I feel like we are in agreement that we can work with that, with the national number. The one that's in the equation now, that's not the regional number. I know that the rivers had mentioned they wanted to --- they would rather use the regional number at some point in the past, but ---.

MS. CROWE: I think the regional number and the national number are pretty close. What we wouldn't want to do is use the 2008 fish consumption study.

MS. HENTHORN: I think that that was still a point of contention for the manufacturers. I'll need to go back and talk to them.

CHAIR: Yeah. And that --- that may be, but we've had quite a bit of feedback from EPA. And they would have --- they would have some issues with that study, too.

MS. HENTHORN: I just can't make a commitment today.

CHAIR: Okay. All right. Okay.

So I think that that --- that covers what I wanted to cover in the meeting today. And we have quite a bit of homework to look at. Maybe some of us more than others, but we'll all have some chance to look at some new information or some --- you know, like the updated version of this --- this flowchart and whatnot in the meantime.

So was there anything else we wanted to talk about today?

All right.

Well, I really appreciate everyone's time and ---.

MS. CROWE: When is our March meeting?

CHAIR: When is it? It's March 24th. So it's four Wednesdays from today.

MS. CROWE: Same time?

CHAIR: Yes. I'll send that out. So you can have it on your calendars exact.

All right.

Any other questions? I really appreciate everybody coming with an open mind and working through this together. I know we've all had different ideas and thoughts. And I feel like we've arrived at something that can --- we can move forward with. Hopefully the BAF was just as easy. Everybody keep their fingers crossed.

All right.

Thank you all so much and have a great rest of your day.

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MEETING CONCLUDED AT 11:51 P.M.

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CERTIFICATE

I hereby certify, as the stenographic reporter, that the foregoing proceedings were taken stenographically by me, and thereafter reduced to typewriting by me or under my direction; and that this transcript is a true and accurate record to the best of my ability.

I certify that the attached transcript meets the requirements set forth within article twenty-seven, chapter forty-seven of the West Virginia Code. This notarial act involved the use of communication technology.

Amber Garbinski,

Court Reporter