STATE OF WEST VIRGINIA

DEPARTMENT OF

ENVIRONMENTAL PROTECTION

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HHC Workgroup

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MEETING: Wednesday, October 28, 2020

10:05 a.m.

LOCATION: Remote via Zoom

Reporter: Kara West

A P P E A R A N C E S

KATIE BENTLEY
KERRY BIRD
ROSS BRITTAIN
LAURA COOPER
AUTUMN CROWE
KATHY EMERY
COLLEEN FLAHERTY
ERICA FLEISIG
DENISE HAKOWSKI
LARRY HARRIS
JOHN HEALEY
JENNIE HENTHORN
ED MAGUIRE
SCOTT MANDIROLA
REBECCA MCPHAIL
JAMES RAY
ANGIE ROSSER
NATALIE SANCHEZ-GONZALEZ
CHRIS SMITH
JAMIE STRONG
GREG VOIGT
JASON WANDLING

I N D E X

E X H I B I T S

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	NONE OFFERED		

P R O C E E D I N G S

MS. COOPER: I first wanted to go around the room today since we have so many new faces. And let's start with --- I want to start with the folks from DEP just to keep it straight who's who if everybody doesn't know everybody.

So I'm Laura Cooper. I'm the water quality standards program manager, and I host these meetings. These are monthly meetings that we're having at --- in West Virginia to review human health criteria and to look into detail at how EPA calculated human health criteria and what went into it and really just delve into all the details that we can --- we can find.

And let's go around to our other DEP folks now, starting with Chris.

Can you introduce yourself, Chris?

MR. SMITH: Hello, I'm Chris Smith, DEP Water Quality Standards.

MS. COOPER: And Kerry?

MR. BIRD: I'm Kerry Bird. I'm with Water Quality Standards.

MS. COOPER: Thank you.

Ross?

MR. BRITTAIN: I'm Ross Brittain, environmental toxicologist with the Office of Environmental Remediation in DEP. And just lending my skills to the Office of Water Quality Standards.

MS. COOPER: All right.

Thank you.

Jason, I see you popped on. Can you go next?

ATTORNEY WANDLING: Yeah.

Jason Wandling, general counsel for the agency.

I will be in and out on video because I'm handling something else as well. So glad to be here.

MS. COOPER: Thanks.

Kathy?

MS. EMERY: Hi, it's Kathy Emery. I am the acting director for the Division of Water and Waste Management.

MS. COOPER: And Scott. I think that's the last of the DEP folks --- oh, no, and Ed --- but Scott, please.

We can't hear you, Scott.

MR. MANDIROLA: Scott Mandirola, deputy cabinet secretary with the West Virginia DEP, used to be

water quality standards program manager, and director of DWWM.

MS. COOPER: Thank you.

And Ed.

MR. MAGUIRE: I am Ed Maguire. I'm the environmental advocate for DEP. I also serve as chair of the Environmental Protection Advisory Council.

MS. COOPER: Thank you. Okay.

Now, let's go to our Environmental Protection Advisory Council folks that are here and their guests, starting with Angie.

MS. ROSSER: Good morning.

I'm Angie Rosser. I am the executive director of the West Virginia Rivers Coalition.

And I have my colleague with me, Autumn. She can go next.

MS. CROWE: I'm Autumn Crowe. I'm the staff scientist for West Virginia Rivers Coalition.

MS. COOPER: Rebecca, can you chime in?

You were unmuted, Rebecca. Now it looks like you are muted.

Okay.

Maybe she's having some audio difficulty.

Let's go to Jennie.

MS. HENTHORN: Jennie Henthorn. And I'm an environmental consultant here on behalf of the regulating community.

MS. COOPER: Thank you.

And now to our EPA folks, if you guys want to go around.

Let's start with Denise.

MR. HARRIS: You missed Larry Harris.

MS. COOPER: Oh, Larry. Sorry, I just --- oh, there you are. There's so many faces on the screen.

Larry, can you go next, please?

MR. HARRIS: Yeah.

I'm Larry Harris. I'm on the DEP Public Advisory Council, representing environmental groups. Originally, Trout Unlimited was why I was put on this council.

MS. COOPER: Great. Thank you.

And now to Denise.

MS. HAKOWSKI: Actually, forgetting Larry gave me a chance to find the unmute.

Hi, I'm Denise Hakowski. I work in Region 3 EPA. I work primarily with West Virginia Water Quality Standards.

MS. COOPER: And now you tag somebody

else, Denise.

MS. HAKOWSKI: Greg.

MR. VOIGT: Good morning, everyone.

Greg Voigt. I'm the chief of the water quality standards and total maximum daily loads section with EPA's Region 3 office in Philadelphia.

James.

MR. RAY: Hey, I'm James. I'm at headquarters Water Quality Standards program and the region liaison for Region 3.

MS. FLEISIG: Hey, this is Erica Fleisig. I am James's team leader in the Water Quality Standards program at headquarters.

And I will tag John Healy.

MR. HEALY: Folks, I'm John Healy. I work in the national branch at headquarters in the Water Quality Standards program.

So we tend to just sometimes get questions about criteria implementation, so that's why I'm here to listen. Thanks.

MS. COOPER: Thank you.

MS. SANCHEZ-GONZALEZ: Hi, this is Natalie. I am an employee with the Water Quality Standards at EPA Region 3, Philadelphia.

I'll be working primarily with Delaware Water Quality Standards, but I'm on the call just to get some familiarity with human health criteria.

MS. COOPER: Natalie, did you get a copy of the slides? Because you won't be able to see them since you're on the phone.

MS. SANCHEZ-GONZALEZ: Yes.

MS. COOPER: Okay.

MS. SANCHEZ-GONZALEZ: I believe I received that email, yes.

MS. COOPER: Great. Thank you.

MS. SANCHEZ-GONZALEZ: Thank you.

MS. COOPER: I think maybe --- Jamie, you want to go? Because we have a few more folks.

MS. STRONG: Sure.

My name is Jamie Strong, and I'm the chief of the Human Health Risk Assessment branch in the Office of Water, Office of Science and Technology, where we develop the human health criteria.

Colleen?

MS. FLAHERTY: Hi, I'm Colleen Flaherty. I'm in Jamie's division, the health and ecological criteria division, in the Office of Water at headquarters, EPA.

MS. COOPER: And is Katie the last one?

MS. STRONG: Yes.

So Katie Bentley is on?

MS. BENTLEY: Hi, I'm Katie Bentley. I'm currently working in the Office of Water at headquarters.

MS. COOPER: All right.

Thank you.

So I think that was everybody. Speak up if we missed you.

Thanks, everybody, for doing that so that we all know who we are. I know this is probably the first time many of you have seen each other.

So we can go ahead and get started.

I'm going to make this screen smaller. I sent out the slides to you all --- might have been yesterday or Monday --- so hopefully, you've had a chance to see them. If you can't see the screen, then you can bring them up.

I am going to go ahead and start that.

Does everybody see the slide --- the first slide now?

MS. FLAHERTY: Laura, did you send the slides to the whole group or just the Region 3 folks?

MS. COOPER: I sent it to everybody. I

think I replied to the meeting invitation, so anybody who was --- had the meeting on their calendar. So maybe it didn't go --- I don't know if it went to everybody.

MS. FLAHERTY: I don't have it for some reason.

MS. COOPER: Denise, could you forward that to the EPA folks who might not have received it?

It's just a few --- it's not that many slides, and it's mostly just to illustrate what we've been looking at and then the questions that I --- I sent to you all earlier.

So do you all see the opening slide now? Oh, no, because I haven't shared my screen at all. Excuse me.

Okay, screen two. That's better. That makes more sense.

Do you see it now?

Okay. All right.

So --- This is weird. Hold on.

So we've been having these meetings monthly since July. In June, we had a meeting with the Environmental Protection Advisory Council to ask if they were willing to conduct these meetings with us, which they voted to do so. And that basically formed this human

health criteria workgroup.

I'm not going over, like, the whole background of how we got to the workgroup. I'm just basically starting at the --- the fact that we started it in June. We're going to be looking through the human health criteria in these monthly meetings until next spring, when we will provide our recommendations to our cabinet secretary as to what additional human health criteria we feel like we should adopt or revise in our rule. So that's how we got here in a nutshell.

And I want to encourage everybody --- I do this every time we meet --- but, of course, there are many of you who are you new --- just pop in any time. If you have a question, just unmute yourself and speak up just as if we were in a conference room together. This isn't a formal setting. We don't need to worry about just popping in and interrupting, no matter what. So that's totally fine. And a lot of times, there'll just be questions that will pop up. And that's completely understandable.

So this first slide here you received earlier. It's just our agenda for the day. We already did the first bullet on the agenda.

And now I'm going to go into a quick review of our first few meetings so the EPA folks have a

general idea of what we've been talking about, what we've been looking at, and also for our own --- for ourselves to remember what we went over. But again, it's going to be really brief.

We may only have --- I think the folks from EPA may only be with us until 11:00 today, so we need to get started. So it will be quick review. Then we're going to go through questions that we have and any additional questions that we can think of.

Okay.

So we started these meetings in July. We looked in general --- at the calculation --- how the calculation was done in the 2015 criteria. We recognized that there was an increase in body weight, drinking water, fish consumption rate. And then they used BAFs instead of BCFs and they added --- they added relative source contribution.

We also talked about the --- like it says in our water quality standards rule in West Virginia --- that we --- we have a risk factor for carcinogens of one in a million as opposed to some other states around us that do it differently. But that's right in our rules, so that's how we do it, which is the same risk factor that EPA uses. We also did some --- We went over each factor

in EPA's equation.

And we also talked about what other states around us are doing right now. Pennsylvania seems to be just about --- I believe they're completely finished adopting the new --- the 2015 criteria, as well as Virginia. But Virginia does use a different risk factor, a 1/100,000 risk factor. Ohio is in the stages of adopting water quality standards --- these new criteria. And Kentucky is --- attempted it several years ago and isn't sure what they're going to do next. That's kind of where the other states around us are in general.

So just one quick slide here about the --- the things that we reviewed in July. This is --- We put up this slide back then and talked about all the parts of the equation: you know, what's on the numerator of the equation, what's on the denominator, and how that affects the outcome. And again, we recognize that --- the parts of it that have changed since the 2002 criteria: the water intake increased to 2.4 liters; bodyweight increased from 70 to 80 kilograms; and, of course, bioaccumulation factors were used instead of bioconcentration factors, which is a big --- a big part of what we're talking about today. The toxicity values were updated depending on if there was new research in the databases that were used.

And again, like I said, they added relative source contribution, which was a new thing from the previous criteria.

So then in August, we looked into --- we went through a really --- one specific EPA criteria document from top to bottom so that we really understood what those criteria documents said. And, you know, we made it clear that looking at these --- looking at many of these criteria documents, like 80 to 90 percent of it says the same thing, and then that remaining bit specifically talks about the chemical that it's about and how it was --- how it was calculated specifically. But for the most part, there's a lot of information in those documents that's general to all criteria. So we learned from --- from one of them specifically.

We also talked about IRIS updates that have been made since the 2015 criteria revision, especially the updates that are in reference to benzo(a)pyrene, which affect several others. Those --- Those toxicity changes would really end up multiplying the criteria that depend on benzo(a)pyrene by about seven. So that's an interesting change that's happened since 2015.

And we went into --- we talked about the decision tree. We've looked at the --- basically the

framework decision tree each time that we've met. And we talked about how EPA --- and let me go to the next slide because this is kind of an example --- the decisions that were made based on --- to determine what would be used for bodyweight and what would be used for drinking water intake.

So this slide is similar to one that we looked at that month when we had Ross Brittain, our environmental toxicologist, talk that day about the --- He looked up the tables that were used to decide this.

And basically, for water --- and this is the one for water intake --- they calculated an age-weighted value for the mean and each percentile with this data. And then they used the birth to 78 years --- let me click again so you can see --- yeah, the adult --- basically, it's that 90th percentile of adults --- adult weights. And this is the --- from the exposure factors handbook that was used to come up with this number.

And so we basically looked at how --- how these decisions were made and where they came from. We generally agreed that the way that EPA looked at bodyweight and drinking water intake both made sense. Although they were looked at a little differently, it made good sense.

So we kind of moved on from there after we reviewed those decision-makings (sic).

So then in September, we really wanted to delve into bioaccumulation factors. We had --- Chris Smith gave us a great overview of bioaccumulation factors, what they mean and how they're different from bioconcentration factors. And then Jennie Henthorn gave us a good presentation on looking into the spreadsheets that EPA has shared with us regarding the details of how those were looked at. And we --- of course --- we talked about questions that we wanted to ask at this meeting.

And like I mentioned, we've gone through the decision tree framework several times throughout these meetings so far. And this was an example of one of the slides we used at the meeting when we went through a criteria document from top to bottom.

We used anthracene. So we went through that one with the decision tree, basically just showing this is how you move through it. You look at the hydrophobicity of the chemical, if it is moderate to high, meaning greater than --- if the log K_{ow} is greater than 4, you end up --- then you look at the metabolism has --- it's highly metabolized; then you end up with looking at Procedure 2, which has a hierarchy of procedures that

should be used depending on what data is available for that chemical. And for this particular one, for anthracene, EPA wasn't able to locate peer-reviewed bioaccumulation factors or lab-measured bioconcentration factors for all three trophic levels, so they used the BCF for trophic level two and three to estimate the national BAF.

And that was just an example. Basically, went through --- each chemical was done in that kind of --- going through that decision tree. And then in the end, looking at what data was actually available and coming up with a national BAF based on that.

So that is --- that concludes my quick review of where we've been, what we've been looking at. We've had some great discussions so far.

And we --- I want to get now into the questions that we have for you all.

We --- I sent these out a couple weeks ago, and then I sent the slides out this week so you kind of get an idea of what we're --- what we're looking for here.

So I don't know exactly who I'm addressing specifically, who is going to speak the most. But generally ---

So when we were looking at the data, it's obvious that in many times, like, the log K_{ow} was used even though that was generally the least-preferred method.

And we wanted to get a sense for the confidence of the log K_{ow} method given that it was used a majority of the time even though it was --- it's the least-preferred method to use. And, you know, how did that preference develop? What's better about a lab-measured BCF or a field-measured BAF that would, if it was available, be better than the log K_{ow}?

MS. FLAHERTY: I think I can start to answer that question, Laura.

Can you hear me?

MS. COOPER: Yes.

Thank you.

MS. FLAHERTY: Sure.

So it sounds like you guys have done a lot of --- had a lot of discussion about the hierarchy, so I'm not going to go into that too much unless you want me to.

So like you said, we followed hierarchy and we had this, you know, preferential based on our methods. We used BAF estimates for the three trophic levels if we had them. And then if we didn't, we'd want a BCF method. And if we didn't have that, then we used the

K_{ow} method if it was a nonionic organic. And we followed Procedure 1 or 3 from that framework.

So, you know, there are strengths and limitations to all three of these ways, I would say. And they are described in our technical support document from 2003. There is a table that summarizes the strengths and weaknesses and limitations.

But I guess I would say --- So for when we use the K_{ow} method for Procedure 1 or 3, when that applied, we made sure to use peer-reviewed, publically-available K_{ow} information from reputable sources. So I think, you know, that was the way that we ensured the accuracy with --- of the K_{ow} depends, obviously --- you know, it's always dependent on the quality of data that you have.

But we used primarily assessments from Agency for Toxic Substances and Disease Registry, ATSDR. We use that preferentially because it's such a --- it's a reputable, publicly-available, peer-reviewed source. And then if there wasn't an assessment for a chemical with ATSDR, we then went to the hazardous substances databank. So we use K_{ow}'s from those sources. So I think we feel like they're --- you know --- they're accurate.

If we had multiple K_{ow}'s, we followed the

methods to do a mean K_{ow}. And all of that information is available on the spreadsheet --- that I'm sure you guys have looked at a lot --- that we posted online.

Does that help?

MS. COOPER: Yeah.

When you have data from a study that is not available, how did you determine what the K_{ow} was then? Like, if you didn't know whether a study on a dry-weight basis, how would you determine lipid content at that point?

MS. FLAHERTY: For K_{ow}? The K_{ow} method?

MS. COOPER: Yeah.

MS. FLAHERTY: Sorry, I'm not following.

MS. COOPER: Those studies that you might --- you may not know whether --- like, the study doesn't actually report whether it was dry weight or wet weight. So how do we determine at that point what the lipid content is --- go through the framework? Like, if the ---

Sorry, I can move through here.

Maybe we can save that for another --- I have a slide later on where we have the ---

MS. FLAHERTY: Okay.

MS. COOPER: --- different data that'll show what I'm talking about.

MS. FLAHERTY: Okay.

MS. COOPER: Does anybody have any follow-up questions on this question about K_{ow}, the use of K_{ow}? I mean, I know this is something we've talked about a lot, but --- the log K_{ow} was the least-preferred method in the hierarchy, but it was the most used. Was there anything else that would help to clarify that for anyone?

All right.

MR. BRITTAIN: Laura --- Actually, I have a follow-up question. I'm sorry, this is Ross.

I have a follow-up question on that. Not necessarily about that specifically, but just for EPA in general because, you know, what it is ---

It seems like you went to K_{ow} a lot because there wasn't a lot of good research done on the things that you really need in calculating your BAF directly.

So I was wondering: Do you know if there is an impetus now within EPA to fund more research along those lines to get better data for us to use?

MS. FLAHERTY: Gee.

Jamie, do you happen to know that? You've been more plugged into the ORD (phonetic) work.

I mean, I know we're working on specific cases. For example, some of the fluorinated chemicals,

there's great interest in understanding their bioaccumulation. And so we have been working on a couple of specific chemicals to look at bioaccumulation.

I believe our lab in Duluth --- the Office of Research and Development lab in Duluth, Minnesota, does some bioaccumulation work. But I'm not sure if, you know, the update of the human health criteria has spurred any of that research on.

I think it's more kind of emerging contaminate bioaccumulation. And metals, there's been a great amount of work in looking at bioaccumulation of metals, to get our arms around that.

MR. BRITTAIN: So emerging contaminates? Am I hearing PFAS then?

MS. FLAHERTY: That's the hot one lately, was that they're --- you know --- So it's hard to define emerging contaminants.

MR. BRITTAIN: Yeah.

MS. FLAHERTY: It's --- A lot of people say it's anything that's not regulated, which is a lot of chemicals.

MR. BRITTAIN: Yes.

Okay.

Thanks.

MS. FLAHERTY: Yeah.

Jamie, do you have anything to add?

MS. STRONG: No. I was just going to say the same thing. It's more concentrated on chemicals that are kind of the --- the emerging contaminants grouping of ---- sorry, I have a puppy.

So like you said, Colleen, that in a nutshell is where I've seen the ORD research focusing.

MS. FLAHERTY: Thanks.

MS. COOPER: Do we have any more questions on this topic?

Just real quick since we've brought up PFAS.

Is there any plan to incorporate PFAS into the human health criteria updates?

MS. FLAHERTY: Great question.

MS. STRONG: This is Jamie.

As part of our PFAS action plan that's available online and part of the update that was put out, I think, in February of last year, we've put forward that we would be looking at the data available for the development of aquatic life and human health criteria for PFAS. And so we're looking into whether there's the data there to do that.

MS. COOPER: All right.

Thank you.

Does that --- Is there a timeline set on that process?

MS. STRONG: In the action plan --- Colleen, correct me if I'm wrong --- there's too many deadlines related to PFAS these days --- but I believe in 2021 is the date that we put out that we would look at the data and see if there's a potential for development there that's not in the criteria. We would be looking at bioaccumulation information and toxicity information, building off of what we're been doing for every, like, regular determination.

MS. COOPER: All right.

Thank you, Jamie and Colleen.

MS. FLAHERTY: Yeah.

There's also work being done on the aquatic life side for PFOA and PFAS. And that's describing the PFAS action plan as well. I think our date for those criteria are in 2022, to determine if we can develop aquatic life criteria.

That's a much more complicated process, I think, because we can't just pull a reference dose off the shelf for those. We have to look at all of the aquatic

toxicity studies and then --- and do the species distribution ourselves. So that's a pretty big undertaking. And I bet a lot of states would be interested in that one as well.

MS. COOPER: All right.

Thank you.

Let's move on to the next question.

So there were several times when data was used from a study for some chemicals but not for others. And it was --- we were kind of wondering how that happened.

I don't know if that's my audio that's doing that.

But for instance, there was a study, *Freitag et al.*, conducted in 1985. It was used for --- Can you guys hear me okay?

MS. FLAHERTY: I can. I don't hear whatever you're hearing.

MS. COOPER: All right. Good.

It was used for several chemicals. But the paper actually reported many others that are under human health criteria. And we were wondering how that data was --- was accessed and why it would have shown up for some but not for others.

MS. FLAHERTY: Yeah, that's a good question.

So we used the Arno and Gobus (phonetic) Database and Environment Canada database. And for example, for the Freitag paper, the ones from the Freitag paper that were included in the Arno and Gobus database or the Environment Canada database were included in our raw data spreadsheet that you guys have access to.

But for some reason, Arno and Gobus didn't include all of the data from the Freitag paper. And I haven't had the chance to look into why that was necessarily.

But I do know that they --- Arno and Gobus rated many of the data points from this paper as poor and they were given a poor score. So they did a data evaluation as they entered things into the database. And they were rated poor because they were considered to have insufficient exposure duration and they weren't at steady-state. They --- This Freitag paper had data for algae, which is trophic level one, which we actually don't consider in the BAF calculation. We look at two, three, and four trophic levels.

So we looked at the fish data for those that were included in the Arno and Gobus database and the

Environment Canada database, which was a subset of these. But for those, they were considered not to be at steady-state.

And so we didn't use any of the Freitag data to develop national bioaccumulation factors for those reasons.

MS. COOPER: Okay.

Is that --- I'm not sure --- Is that evident in the spreadsheet --- that data, Freitag data? Was it?

MS. FLAHERTY: Yeah.

So I don’t know if you have the spreadsheet up.

If you look at the ---

MS. COOPER: I have part of it.

MS. FLAHERTY: Okay.

So the tab that’s called Raw BAF and BCF would summarize all of the raw data we looked at. And then you kind of go through the tabs from left to right to get --- to see the baseline calculations.

MS. COOPER: Right.

MS. FLAHERTY: Sorry, the BAF calculations.

In the version that I have, which I think

is the one that you have --- I was going to double check that, and I didn't have time --- there are some cells that are shaded gray.

Do you see that in your version, on the National BAF tab? Those were considered unverified. And in most cases, that was due to units not being given or other, kind of, fundamental flaws.

MS. COOPER: Okay.

MS. FLAHERTY: And we just didn't have confidence in the data. So we --- you know, we considered what Arno and Gobus --- how they evaluated the data. We also looked at --- against the data quality guidelines presented in the TSD from 2003 ---

MS. COOPER: Right.

MS. FLAHERTY: --- to make decisions about that. But we didn't end up using any of the Freitag data.

MS. COOPER: Okay.

Do we have some follow-up questions on this --- this question? I know that Jennie is a lot more familiar with this --- part of this than most of us.

So you have any questions, Jennie --- or anyone?

MS. HENTHORN: Not for now.

MS. COOPER: Okay.

So another question we have is if you have any plans to recalculate these criteria due to recent updates in the toxicity research from the IRIS database or, like --- kind of like Ross mentioned before --- to recalculate BAFs based on any new data.

If no, we've noticed that a lot of the bioaccumulation factor data was from a long time ago. And I know that you've used those --- those specific databases. But some of those databases have been updated since we accessed them. So we were wondering if that's going to be looked at again.

MS. FLAHERTY: We would really like to try to find a way to more efficiently be able to update criteria of aquatic life and human health. And, you know, unfortunately, we just haven't --- It would be great, for example, if every time a new IRIS assessment was published that, you know, we could go in and just update our number. Once you have the methods established, it's a pretty easy calculation to do. But we just haven't been able to do it that efficiently.

I mean, in 2015, that was the first time we'd followed the 2000 method. So it was 15 years later that we finally were able to put out some new numbers. And before that, they were very old criteria.

So I think --- so the answer is no. Right now, we don't have any plans to update any of these.

So that doesn't mean that you can't take the latest IRIS value and use that. But I will say the ones that we didn't update in 2015 were some of the, I guess, harder ones: a lot of metals, PCBs. And I think if we were to do kind of a heavy lift in updating human health criteria, those would probably be the next ones that we would tackle along with some of the emerging ---

MS. COOPER: Do you want to address the ones that weren't updated in 2015 first?

MS. FLAHERTY: Yeah.

I mean, it's really --- so it's a resource issue for us and --- as it is with everybody on the phone, I'm sure --- and it's just the process that we have to follow. So these all go into a peer review; they go out for public comment. There's a lot of process internally and --- you know, just to get the publication out --- published and registered.

MS. COOPER: And who ---

MS. FLAHERTY: It's not a great answer. I wish we were more nimble than that, you know.

MS. COOPER: Okay.

So you kind of touched on it.

Was --- Is there a --- Is there a --- Will there be a focus on trying to revise that process to make it more --- more nimble?

MS. FLAHERTY: I don't anticipate it getting any easier. In fact, I think it's going to be harder as we go.

MS. COOPER: Right.

I mean, because the methodology was developed, and then 15 years later, the criteria came out. So that's a big chunk of time. And in that time, of course, new research was being done. And ---

MS. FLAHERTY: Yeah.

MS. COOPER: --- it's hard to keep up.

MS. FLAHERTY: Right.

You know, it's something we put in a tremendous amount of thought into how we might do it.

You know, the only thing I can think of doing --- this isn't something --- this is just me talking; it's not something that we have talked about, you know, with my management or anything --- but if you could somehow have a table of all of the inputs online and then just be able to swap out, you know, those inputs for the latest science, that would be the way to do it, I think. But that's my opinion.

MS. COOPER: I mean, it seems like that would be kind of the --- might have been the goal of having that big fancy spreadsheet, that you could replace things ---

MS. FLAHERTY: Yeah.

MS. COOPER: --- in that.

MS. FLAHERTY: Right.

MS. COOPER: I have a question --- Go ahead.

MS. FLAHERTY: No, go ahead.

I was just going to say like I said, you know, if you got a new tox value that is peer-reviewed, publically-available, it's a final number from IRIS, you know, go for it if it's more current.

MS. COOPER: Okay.

MR. HARRIS: Can I make a point?

MS. FLAHERTY: Sure.

MS. COOPER: Yes, Larry.

MR. HARRIS: This is Larry.

You know, as an old scientist, I'm familiar with a lot of data that are still good.

Is our feelings that old data is not as good as new data, isn't that data ageism?

MS. FLAHERTY: That's a great point.

Yeah, you know, I think --- I think where it makes the most difference is probably not in the bioaccumulation area, but probably in the toxicity area. So if you've got, you know, a brand new IRIS assessment or something of that caliber that takes a look at all of the toxicity information over the decades and comes to, you know, a decision on the critical effect, to me, that would --- well, not just to me but to --- according to our method, you know, that would trump everything else, really, a brand-new assessment like that that would consider all of the old studies in addition to the new studies.

I think, you know, some of the older bioaccumulation studies, you have to look at data quality. Sometimes, the --- they weren't conducted --- and I'm not trying to be ageist here at all --- but sometimes, they weren't conducted up to snuff compared to our data guidelines.

But, you know, we still use a method for aquatic life criteria from 1985 because it's a fantastic method that the world uses, frankly. So it's not to say that there aren't things that could be improved and whatnot. But it's still --- you know --- it has stood the test of time. And I think a lot of these data can do

that.

MR. HARRIS: Thank you.

MS. FLAHERTY: Sure.

MS. HENTHORN: It's Jennie.

Do you mind if I hop in and ask a question?

MS. FLAHERTY: Sure.

MS. HENTHORN: Okay.

This is the one that kind of troubles me. Because it seems like to make the determination of whether you're going to use K_{ow} or bioaccumulation factor data, you've first got to have a modern database. And it seems like relying on the Arno and Gobus and Environmental Canada data, if it hasn't been updated, you don't really know if there's reliable BAF data that could be used.

So I think that that's --- that's my concern. You defaulted to the K_{ow} because you don't have a modern database to use. And if there's not an effort to ever do that --- There's a bunch of BAF, BCF data that's been done in the last 20 years, but it doesn't sound like there's any focus on compiling that.

MS. FLAHERTY: Right now, that hasn't been a priority for us. It could be if we get, you know, requests from folks like you to do that. I mean, that's

really --- You know, it's something we could do in the future, but it hasn't been a priority right now.

This --- The Arno and Gobus database and Environment Canada databases are the same ones that we use in our pesticide and toxics office as well to --- to develop BAFs. So it's a --- it's a well-used, well-respected database. But we don't --- right now, as I said, we don't have plans to update it.

It doesn't mean that you couldn't use the one that's --- if there's a more current version out there right now. I'm not sure if there is.

MS. HENTHORN: I haven't been able to find where those are living and breathing databases like some of the others, like IRIS.

MS. FLAHERTY: Okay.

That, we can probably help track down.

Let me look in the ---

We had a person on our staff who was our guru in bioaccumulation --- all things bioaccumulation, and she left the agency earlier this summer. So I'm pinch-hitting on this today. I apologize.

MS. HENTHORN: That, I understand.

MS. COOPER: So along the lines of --- of bioaccumulation data, we have heard that Delaware is

working on using their --- like, different bioaccumulation factors. I think that they're putting their bioaccumulation factors out to public notice maybe next month.

And I think --- Is it Natalie that we have on here that is --- that works directly with Delaware?

Can you give us some update on where Delaware is at with their BAFs?

MS. SANCHEZ-GONZALES: So based on my last discussion with Delaware, it looks like the BAFs have been developed but they're still undergoing, I guess, internal review. They do, I think, plan to public notice them at some point in the coming weeks. But that's still --- it still hasn't been done yet.

MS. COOPER: Are they doing that with newer data, with newer research?

MS. SANCHEZ-GONZALEZ: Yes, I believe they are. Yes.

MS. COOPER: So West Virginia folks, I mean, I know we've talked about this quite a bit. But this is kind of newer information for us, that it seems like maybe Delaware is doing a lot of work that we can look at pretty soon and see what they're doing. Because they're also concerned that the bioaccumulation factors

are based on data that is pretty dated --- or maybe not dated, maybe just aged, you know, for Larry. We don't want to be ageist with data. But there might be more information out there that could better inform bioaccumulation factors. I think we might be able to see if Delaware is --- what they're doing on that and see if that can help us too.

Do we have any more questions on this point before we move on to the next thing?

All right.

Let's move on.

I don't know why --- For a second there, I just muted myself just as I was getting ready to speak.

Okay.

So thanks for that discussion, Colleen and everyone.

So I --- This last one, I have part of the database --- or part of the spreadsheet on the next slide. It was too big to put on this one.

But just to preface this --- this question:

So when we get down to the bottom of the decision tree, when we're moving among the bottom row and we're deciding between using BAF, BCF, or the log K_{ow} to

determine the national bioaccumulation factor --- You kind of spoke about this a little bit before, but can you tell us more about how you moved through this? We can see in the spreadsheet what decisions were made, but it's kind of hard to figure out how --- how you went --- decided in one way with one chemical and went a different way with others. We kind of talked about this a little before on a call that we had with you guys last month.

But generally, when we look at this spreadsheet --- I hope you guys can see it all right. It's as big as I can make it --- this part of the spreadsheet --- And this is just the top of it. It's not any specific area. It's just in alphabetical order.

But when we look at these things, we see sometimes you have trophic level three data and trophic level four data or maybe you don't have two or maybe you have it but you went with the K_{ow} anyway for different reasons. And we just were curious about how --- how these decisions were made between the methods when you got to the bottom and you can use --- you used the data that you've got.

MS. FLAHERTY: So I think you brought up two examples. Maybe it would helpful if we walked through those.

MS. COOPER: Great. That would be great.

MS. FLAHERTY: Okay.

So you asked about aldrin and benzo(a)anthracene. So let's do aldrin first.

So for aldrin, there are no bioaccumulation factors available for the two trophic levels, right?

MS. COOPER: Right.

MS. FLAHERTY: And then --- sorry, I haven't had time with this --- then it looks like there's one BCF.

MS. COOPER: For trophic level three?

MS. FLAHERTY: Right.

And so we didn't have all of the BCF trophic levels represented.

Now, we can only use the K_{ow} method if the chemical falls under Procedure 1 or 3, if it's applicable using the framework.

And so for aldrin, the K_{ow} method was applicable because it fell under Procedure 1.

You know, I think it would be helpful on this table if we had included which procedure --- like a column with procedure that we --- that was applicable to each chemical. That might make it easier to see.

MS. COOPER: Right.

MS. FLAHERTY: So we --- So for aldrin, the K_{ow} method was applicable. So we used that even though we had the one BCF trophic level because the K_{ow} method was applicable. We felt like that was a better representation for a national recommendation, to use that method.

For benzo(a)anthracene, the K_{ow} method was not applicable. And we used Procedure 2 following the hierarchy. So there were two BCFs --- If you look in the table, there are two BCFs for benzo(a)anthracene: 3,800 and 21,000. But --- it's not in your spreadsheet --- those were unverified, meaning there were data quality issues with those.

So if you want, I have a spreadsheet that has the unverified data shaded in gray. I think it's the one that's on the web.

MS. COOPER: No --- And you mentioned that before.

Is --- Do we have --- I'm kind of asking Jennie here, who's the most familiar with the spreadsheet.

Do we have the data that's shaded in gray for when it was unverified or it was not used?

MS. HENTHORN: Yeah, I have to admit, I

removed the gray shading because I didn't know what it was. I don't think there's anything that says that gray equals unverified.

MS. COOPER: Okay.

MS. FLAHERTY: Yeah, it's --- I had to look for it too, Jennie. But it says it in the data dictionary. On the first tab, it says the gray --- the grade shade, results were based on unverified data and is not used for criteria development.

MS. HENTHORN: Thank you.

I missed that. I was actually --- When I did this little thing, I was trying to get it as simple as possible. So yeah, there was ---

MS. FLAHERTY: Right.

No worries. This is complicated stuff. I mean, it's good to talk through it.

Okay.

So we have two BCFs for benzo(a)anthracene.

Now, so instead --- because we didn't have --- so it didn't --- benzo(a)anthracene, we can't use the K_{ow} method. And the two BCFs we had were not verified. They had data quality issues.

So what we ended up doing for those benzos

was using benzo(a)pyrene as a surrogate for the other PAHs (phonetic). And that approach was consistent with another approach that suggested that benzo(a)pyrene is a good indicator. And we actually --- as you know, we talked about earlier --- we used the tox value for benzo(a)pyrene for all those other benzos as well.

So that's how --- So in the end, for that one, we ended up using the benzo(a)pyrene BCFs to derive the BAF value for it, for benzo(a)anthracene.

Is that clear? That was a lot.

MS. COOPER: Yeah, that actually helps a lot.

MS. FLAHERTY: Okay.

MS. COOPER: That clears a lot up for me.

And yeah, it's a lot of complicated information. And we're ---

MS. FLAHERTY: Yeah.

MS. COOPER: --- doing our best to understand it. But there --- it's really helpful to have you here to explain and talk to us about it.

Do we have any more questions along the lines of this while we have this part of the spreadsheet up?

MS. HENTHORN: Just for clarity, how did

you draw the line between verified and unverified? What did you need for it to be considered verified?

MS. FLAHERTY: Yeah.

So in most cases, unverified was the units were not available or it wasn't at steady-state. And that was identified in the Arno and Gobus.

So they had, I think, three rankings for criteria.

If you want, I can go back and look for the data quality guidelines. I have a write-up of that. I don't have it in front of me, but I can share that with you if you'd like.

I know Arno and Gobus had three kind of tiers: poor, better, best kind of things.

And then we also evaluated data against our --- against the guidelines in the support document from 2003.

MS. COOPER: All right.

Thank you.

Anything else before we move on to additional questions? Like any questions that popped up?

MS. MCPHAIL: Hey, Laura, can you hear me?

MS. COOPER: Yes, I can.

MS. MCPHAIL: Wow, I can't --- Oh, that

worked.

I had one. And I'm sorry if I'm looping back around to something that Colleen had already talked about. This is Rebecca with the West Virginia (audio broke).

So just a quick question with regard to the ways that the EPA has identified to come up with the human health criteria.

Does each of those methods, in your opinion, result in a safe criterion that the EPA would accept in establishing future criteria?

MS. FLAHERTY: I kind of missed the --- the middle of that question.

So I heard the part --- If you use what will it result in a safe criterion?

MS. MCPHAIL: Well, the EPA identified four ways, essentially, to establish the criteria.

So presumably, you know, using one of those, do you --- Does each of those methods result in a safe criterion that the EPA would accept for future human health criteria proposals?

MS. FLAHERTY: So we didn't --- Are you saying that if you calculated the BAFs using any of the four --- well, it's actually three --- ways, that we

would ---

MS. MCPHAIL: Yeah.

MS. FLAHERTY: No, I --- So we follow a process that had, you know, the framework that we talked about in the beginning, the figurative tree one from the TSD.

So we had six different procedures. And we followed the process based on the type of chemical and where it fell out into those procedures, which one was appropriate. So we --- it wasn't a haphazard kind of thing where we picked, you know, BCF over K_{ow} just because. So we followed the steps in the method.

Is that --- I hope that really answers your question.

MS. COOPER: Maybe, like, you're saying that as long as we would follow --- we were following those same steps, getting to the same conclusion, then with your data, maybe --- That's what Rebecca's asking, maybe.

MS. FLAHERTY: Oh.

MS. MCPHAIL: Yeah, I think that's right.

MS. COOPER: Yeah.

So if we went through --- if we were --- had your data and we went through the same framework and

came to, you know, Procedure 1, 2, 3, or 4, relying on method BAF, BCF, or the log K_{ow}, would any of those --- would that be something that we could do?

I'm not sure if that's exactly what Rebecca was asking.

MS. MCPHAIL: I think that's on it, Laura. Thanks.

MS. FLAHERTY: Yeah, I think we want you to use, you know, the best scientific information you have. And if you feel like there's a reason you can't use, you know, something that we did and you've found something better and it's defensible, I don't think we'd have a problem with that.

Getting a little bit out of my area because the standards in health protection folks on the phone are much better at this than I.

MS. COOPER: Is there somebody else that wants to speak to that?

MS. HAKOWSKI: I think Colleen got to the point when she said it's defensible. So, I mean, certainly, you have options for reviewing the criteria. But when it comes down to it, it's like, you know, we're going to need to look at the information and make sure --- I mean, it's probably best as you're moving along if

you want to get our opinions on things and then moving on rather than, like, taking it to the end and then us going, this doesn't work.

But Colleen got the point when she said it needs to be defensible --- so you're --- and the best science.

I mean, you know, it's kind of a combination of things. It's kind of hard to answer that question in a vacuum.

MS. COOPER: Right.

And as Colleen said at the beginning of her answer, we couldn't just select one of the procedures willy-nilly. We would have to go --- you know, we would have to use the framework and use the ---

MS. HAKOWSKI: Right.

Because every chemical is different.

MS. COOPER: Right.

MS. HAKOWSKI: In the case.

MS. FLAHERTY: You know, I am afraid I have to jump off in a minute.

Are there any final questions for me?

MS. COOPER: So any additional questions that anyone has while Colleen is still with us?

MS. HENTHORN: Is there --- Is there

something that we could get that could tell us which procedure you used for each of the chemicals? Is that in the overall guidance document or somewhere that I just had missed it?

MS. FLAHERTY: It's in each of the criteria documents for sure.

MS. HENTHORN: Okay.

So it'll say Procedure 1 through 4?

MS. FLAHERTY: Yes.

MS. HENTHORN: And it's one through six?

MS. FLAHERTY: Yeah. Got you.

But I agree that it'd be really handy to have it on that table so that you don't have to look up every one of the 94 documents. So let me see about getting that added to the spreadsheet as a column. And if that --- if that works for you.

MS. HENTHORN: That's great. Just knowing that I can go back to those documents. I hadn't put two and two together with that. So thank you.

MS. COOPER: Well, it is in the documents. But having it as a column in the spreadsheet would really be helpful.

MS. FLAHERTY: Yes.

MS. COOPER: Because the documents are

long, and it's kind of hard to find the chemical specific info in the documents. But I just brought this slide up because that little paragraph there is what came from the document. That's --- That's the one where they say, "Here's actually what we did for anthracene."

But again, if that was part of the spreadsheet, that would be a huge help.

MS. FLAHERTY: Okay. I can do that.

And just one note about navigating those criteria documents. If you go to the table of contents, the contents are hyper-linked to different sections of the paper. So you can just click on them.

MS. COOPER: Yeah. Thanks.

MS. FLAHERTY: Okay.

MS. COOPER: And once you become familiar with them, it's easy to find where they are.

Go ahead, Angie.

MS. ROSSER: Just, I know Colleen needs to go. The EPA folks, I mean. We've got some questions, some related to BAFS, some not directly.

Would you be open to coming back and, I guess, would the work group be open to having them back?

MS. FLAHERTY: Yeah. I sure would be. I mean, I think this is our job to help you guys figure

this stuff out and see if it works for you. So if I'm available.

MS. ROSSER: We really --- we really appreciate it. And I think that we would absolutely want to have --- have you back whenever we have some more questions for you.

UNIDENTIFIED MALE: And could I add to that? If you can send some written questions ahead of --- ahead of future meetings, that would be helpful too. We'd be --- maybe get through them more quickly.

MS. FLAHERTY: Yeah.

MR. BRITTAIN: That was actually going to be my --- my comment. Because I have a follow-up question. But in the interest of time and Colleen's schedule, I was thinking that it would be better to maybe email the questions and then see --- and you could respond.

So Laura, is it okay with ---

MS. COOPER: Yeah. Of course.

MR. BRITTAIN: I think --- I think I have everybody's email. If not, I'll email you and ask for --

MS. COOPER: Right.

You can just reply all to any of the meetings.

MR. BRITTAIN: Yeah.

MS. COOPER: And I'll take an email to all of us.

MR. BRITTAIN: Yeah. And I'll ---

MS. FLAHERTY: Can I just --- I just want to make one suggestion. Let's just follow the normal channels that you usually do for asking questions about criteria or standards. So whether, you know, that's going through Region 3 before it comes to headquarters or whatever. I just don't want to get everybody, you know, mixed up with emails, so ---.

MS. COOPER: Right.

MS. FLAHERTY: And so the normal ---

MS. COOPER: Ross and the other members of the work group have access to our emails, the members of the work group. And then I would send anything to Denise.

MS. FLAHERTY: Okay.

MS. COOPER: And then Denise can figure it out from there.

MR. BRITTAIN: Yeah.

MS. FLAHERTY: That'd be great.

MR. BRITTAIN: Yeah.

Maybe, Laura, that's what I'll do, is I'll

email my question to you, Laura. And then you can forward it out to anybody that you deem appropriate.

MS. COOPER: Okay.

MR. BRITTAIN: Thank you.

MS. COOPER: And you can feel free, Ross, to send that to our group. Because that's --- that's everybody that's in our work group.

MR. BRITTAIN: Okay. Sounds good.

MS. FLAHERTY: Okay.

I'm going to jump off. But it's been nice to meet you all. And I'm sure we'll be in touch soon.

MS. COOPER: Thank you, Colleen.

MS. FLAHERTY: Okay. Bye.

MS. COOPER: So while we have other EPA folks still on the call, did we have any other questions that might be appropriate for them?

MS. CROWE: Yes, I have a question.

MS. COOPER: Yes, Autumn?

MS. CROWE: We talked a little bit about Delaware updating their criteria. They're actually going through and assigning BAFs based on more recent data.

Do we know of any other states that are doing something similar? Are there any other states that are looking as deeply into this as West Virginia?

MS. COOPER: I am looking to see if anybody un-mutes themselves. But in the meantime, Delaware is the only one that I know of. And that's a Region 3 state, which is probably why I'm more --- why I've heard about it. Well, I know because I have talked about it with Denise and Greg a couple weeks ago.

But do any of the EPA folks know of any other states that have
--- are doing what Delaware is doing or doing what West Virginia is doing as far as looking into this in greater --- greater detail?

MS. FLEISIG: This is Erica Fleisig with headquarters.

I can just add --- I don't have them all in my head. And I think for the most part, states that are updating human health criteria are just, you know, using our recommendations. Possibly tweaking the fish consumption rate or the cancer risk level, but not so much digging into the BAFs or the toxicity values on their own.

You all might be familiar with Florida's effort a couple years ago. They were --- They were adjusting some of the BAFs for state-specific information like percent lipid content. They did a couple-year

effort to, you know, gather data and then adjust our national recommendations for Florida.

But they ended up getting held up with some, you know, litigation within the state. And now they're exploring a different fish consumption rate, possibly --- or exploring doing a fish consumption survey to understand how much fish people in the state are eating. So that effort is ongoing.

But I would say it's --- yeah --- it's more the rare occurrence where a state is looking to adjust or, you know, delve deeply into the BAFs.

MS. COOPER: Thanks, Erica.

MR. BRITTAIN: I guess I could actually ask my follow-up question, then, to the rest of the folks that are still here with EPA.

One of my --- my concerns was the potential for cumulative impacts of various compounds being in the water at the same time. You can think of PAHs, because PAHs usually come in a mixture, not just one at a time. And there's several PAHs that we don't have health criteria for. Like you said, they aren't even on the list.

And I know you can --- you can account for some of that in certain --- in terms of, like, your

cancer target risk level in terms of it's one to 100,000 or one in a million, et cetera.

But on the non-cancer side, are you guys using a hazard quotient of 1 or 0.1 for overall to try to help account for some of those cumulative impacts? And I'd like to see what your answers are.

MS. FLEISIG: I can chime in and then maybe John Healey also. It's probably more of a Colleen question.

But I believe we use one. But you're probably also familiar with the fact that for non-carcinogens we have the relative source ---

MR. BRITTAIN: Yeah.

MS. FLEISIG: --- component. That's just to account for the same pollutant coming from other sources.

MR. BRITTAIN: Uh-huh (yes).

MS. FLEISIG: I think mixtures is something we've never, you know, on the human health and aquatic life side, you know, not sort of come up with a perfect pontific way to handle. So you're right that a lot of it is sort of uncertain. And, you know, that some of that is accounted for with uncertainty factors and cancer risk level and contribution. We try to ensure

that, you know, these are protective criteria and possibly account for the fact that you're exposed to a lot of different pollutants. But that is an uncertainty that, you know, we just ---

MR. BRITTAIN: Yeah.

MS. FLEISIG: --- acknowledge exists.

MR. BRITTAIN: Okay.

And on the --- on the cancer side, do you guys recommend 10^{-6} to account for maybe cumulative --- potential cumulative impacts in general? I know some states, like Virginia, I believe, does one in 100,000. But do you recommend one in a million?

MS. FLEISIG: Well, our --- yeah. Our guidance from 2000 recommends either 10^{-5} or 10^{-6} to protect your general population.

MR. BRITTAIN: Uh-huh (yes).

MS. FLEISIG: We also recommend looking whether you have any sort of high consuming populations, consuming a lot of fish, for example.

MR. BRITTAIN: Uh-huh (yes).

MS. FLEISIG: Making sure that they are protected, at no greater risk than 10^{-4}.

So states generally use minus fifth or minus sixth for their statewide criteria.

When we develop our national recommendations, you know, the values on our website, we use 10^{-6}. And we also stated back in 2000 that if we are ever, you know, promulgating for a state, we will use 10^{-6}.

But we --- we defer to states on the choice of minus five versus minus six.

MR. BRITTAIN: Okay.

Thanks. I just wanted some clarification on that. I appreciate it.

MS. COOPER: Anyone else want to chime in with a question?

MS. CROWE: Yeah.

Kind of related to that. We talked about --- You know, we're talking about a lot of the bioaccumulation factors in fish consumption. But we have public health experts in West Virginia that are concerned about the bioaccumulation in humans, especially in the fat tissue with the more overweight.

And we talked about this kind of at our last meeting, how, you know, the only --- the only factor to consider that is the body weight.

Is there any other ways that we could consider that, that accumulation in humans?

MS. FLEISIG: I'll give John a chance to speak.

MR. HEALEY: Yeah.

Well, I want to make sure I understand the question. So the --- the exposure factor is --- yes, it's a function of body weight but also your drinking water and fish consumption intakes. So those are the three main considerations of how a human would be exposed to a contaminate.

Providing an accumulation within humans, we --- we don't --- we don't account for that in a sense because humans are the end point here. We are not looking at anyone else coming --- we look at bioaccumulation through their food or through fish, but not through the human consumer. So I don't know if I understand the question.

MS. COOPER: I think that Autumn is kind of saying that if a --- if a person has a higher fat content, then they're going to accumulate a chemical faster than someone who would have a lower fat content.

MR. HEALEY: Well, yeah, in a sense. A larger person could be subject or could accumulate --- could intake more of a harmful chemical and maybe not have adverse effects. Right. So the bigger the body

weight actually results in lowering the criteria value --- or allowing more pollution, so making a less urgent criteria value.

So we have a national default body weight of 80 kilograms. But if a region had a --- like a lot of regional data showing that their default body weight was much larger and they want to use that as a justification, then that would need to be based on kind of regionally specific data that's been collected and considered in that --- that way.

MS. CROWE: Right.

And that's something that we've talked about in this group before, that we don't really have that data. We have general CDC data that talks about the obesity rate among states and that it's higher in West Virginia. But that's not the same as detailed data on distribution of weight and body fat content.

MR. HEALEY: Right.

MR. BRITTAIN: And as a quick follow-up to that.

That does bring up the issue of --- Because I'v --- I've had the same concern about whether a chemical is lipophobic or lipophilic as well. So if you have your more obese people, a more obese population,

yes, they can absorb more. But that's really only if it's a lipophobic chemical. A lipophilic chemical is you can actually take on a lot more.

Are you accounting for that in any way?

MS. FLEISIG: Only in the BAFs and the count of percent lipid in fish.

But I think John said, yeah, we're not --- I mean --- and like Autumn summarized --- I mean, it's the bodyweight and the lifetime exposure that is accounting for the, you know, accumulation in humans.

MR. BRITTAIN: Sure.

And similarly with that, I was also worrying about mutagenic. Because I know that, like, your body weight is based on adults. It doesn't account for the age adjustment of --- of small children and whether or not your chemical --- do you --- for starters. But also, which you know here in West Virginia, we know we're more obese.

So 80 kilograms, probably, even over a lifespan, is probably fairly good. That's one of the reasons why we're okay with it.

But I was also wondering about mutagenic components then or chemicals then, in terms of how were you accounting for mutagenic qualities in some of the

chemicals.

MR. HEALEY: I would point to the --- Like, the exposure factors handbook has more data based on different age group classifications. So that would include the bodyweight and drinking water intake at different age groups, if the state wanted to look at those different groups within the population.

We --- Our national default, as I mentioned, are based on adult populations. So we have the 80 kilograms. And the water intake is based on the 90th percentile of adults drinking water, the same with the fish intake. But if one wanted to go into further details of developmental effects, it would look to more specific age groups at the younger ages.

MS. FLEISIG: And I think some states like Colorado may have done that, for things like PAHs, which John is describing. We had some engagement with them earlier this year on that.

MS. COOPER: All right.

Thank you.

Ross, you're talking, but we can't hear you.

MR. BRITTAIN: Sorry. Sorry.

So at the national level, you're ---

you're not --- are you trying --- are you accounting for mutagenic qualities via your uncertainty factors? Is that what you were hoping? Or --- Or are you just not accounting for them at all?

MS. FLEISIG: I can't answer that without Colleen. I don't know for sure if that went into any considerations on --- on things like PAHs with the national criteria.

MR. BRITTAIN: Okay.

MR. HEALEY: Right.

I would add that to the list of questions that you'd be sending to us, please.

MR. BRITTAIN: Sure. Thank you.

MS. COOPER: And I think there's some information in the criteria documents when the chemicals are considered mutagenic. So I am not exactly sure how that affected it. But I know that it's mentioned in some of the criteria documents.

All right.

Do we have any more questions for these generous EPA folks that are --- are with us?

MS. CROWE: I could keep going if they're willing. Yeah.

MS. FLEISIG: Yeah.

I am missing another call. But I can do, like, ten --- ten more minutes if that's okay.

MS. COOPER: That would be perfect. Thank you.

What have you got, Autumn?

MS. CROWE: Related to some of the standards that would be weakened. We noticed that some of the standards would actually be below the --- or they would actually --- the changes would actually increase them to above the maximum contaminant levels for drinking water facilities.

So I'm wondering how the EPA responds to concerns where it's shifting the burden from industry treating the water to water utilities being able to provide safe drinking water when those --- when those criteria then go above the MCLs.

MS. FLEISIG: Yeah.

I think we tried to note where that occurs and --- you know --- in our --- in our recommendations that states may want to consider using the MCL instead of our criteria recommendation in those instances where they have a drinking water use and they are trying to protect that use. I don't know if we've, like, perfectly captured that in all of the notes on our website. If

there's any that we missed, please feel free to point that out and we can --- we can do that.

But yeah, we're sort of strictly coming up with these health-based numbers. And maybe the MCLs are, you know, likely older in those cases. And so the best we do is sort of point out a potential discrepancy and let states choose in those cases and make sure they're aware if the MCL is more stringent and they're needing to protect a source water, they might want to consider just applying that MCL.

MS. COOPER: Is there any chance that MCLs will be adjusted based on the health data that you have put together --- I mean --- based on the criteria?

MS. FLEISIG: That's another good question for Colleen.

I mean, Jamie's group works on the sort of health-based information that feeds into the drinking water program. So I know they are constantly doing some of that work. I don't know at any given time what pollutants they're focused on.

But that could go in the list of questions. And I also --- I am not in the drinking water program because I don't know enough about their priorities.

MS. COOPER: All right.

And we had that question in our comments on our rule this year. And we checked with your guys, and it was generally that the Safe Drinking Water Act folks will review MCLs periodically. But we weren't sure when or if they were doing it soon. That's our general response.

UNIDENTIFIED MALE: I have one other question. In the past, we've often relied on the EPA for our standards in West Virginia. And as you can hear from this call, we've got a lot of smart people here now in the DEP and on --- on locally.

But I wondered how many other states rely a hundred percent on what the EPA suggests for safe --- safety in --- in what we've been talking about.

MS. FLEISIG: Yeah.

I think that's kind of similar to the question of other states that are looking at, you know, adjusting the BAFs and things. I would say for the most part --- I mean, we could get you guys an accounting of which states have adopted all or portions of our 2015 human health criteria updates. We try to keep some accounting of that internally.

We have now an external search tool that

allows people to look at what criteria other states have. But we also just try to note for ourselves, like, the state picked up our, you know, latest recommended criteria.

I think for the most part, states that are updating their human health criteria, they do just, you know, adopt our recommended numbers. Like I said, possibly some adjustments for, like, the cancer risk level if they use 10^{-5} instead of our recommended --- the 10^{-6} that our website, you know, is based off of. Sometimes some adjustments to fish consumption rate, but that has been rarer.

And then I would say it's --- it's much more rare for a state to be actually adjusting BAFs or looking at new toxicity information. But some states, you know, they do that sort of regularly.

MS. COOPER: And along those lines, Erica, while we have you for a few more minutes, we had many comments on our rule this summer that were in regards to whether the criteria --- whether the EPA-recommended criteria became more or less stringent, meaning whether it went down or up. And the environmental community specifically was requesting that we only revise criteria that became more stringent.

Do you have any comments on that? Like how --- if that's a factor --- if that would be considered a factor in any kind of adoption of criteria?

MS. FLEISIG: No.

I mean, I think like Colleen described, we just followed the science. And so if the science spoke to that pollutant being less, you know, toxic than previously understood, then that's what the science says.

And so if a state wants to update their criteria to our latest recommendation, even if it gets, you know, less stringent, if that's what the science says, that's what it says. And that's not sort of consideration in our review of what they submit.

States can certainly, at their discretion --- I think we just heard --- I don't actually remember the state, but it was a state in Region 4 that wanted to only adopt the criteria that are getting more stringent. And that's what they chose to do. And that's what their, you know, public supported. So that's --- that's at a state's discretion to choose to do that.

But I think it's also fair to, you know, use the latest science and follow that where it goes. I don't 100 percent --- I think we've gotten some questions about how that plays out in permitting and backsliding

and things like that. That is, you know, beyond my area of expertise.

But I think just, you know, using the latest science is --- is a reasonable approach.

MS. COOPER: Yes.

And I think it's important to note that because a criterion becomes larger based on new science doesn't necessarily mean that a permit will be rewritten on that. Because a lot of other factors than just the water quality standard that affect what is in a permit, like technology.

MS. CROWE: Yeah.

We wondered about the anti-backsliding issue and can submit that in writing.

But I've got one more, like, other states general question if you have time.

So one of --- one of our concerns from West Virginia Rivers' perspective that we've been relating to DEP is not adopting all of the 94 updates and only looking at what the state has currently had standards for. Yet, we're aware that some of the compounds in the updated criteria aren't in use in West Virginia, but there's no standards in place.

Are you basing this on other states? How

are you responding to other states who don't have all of these criteria in place but are currently in use in that state?

MS. FLEISIG: That's a good question, yeah.

So, I mean, you guys probably know that there are requirements for priority glutens under the Clean Water Act. So if it's a priority gluten, the Clean Water Act says, you know, where EPA has a 304A recommendation for that pollutant, if that pollutant is reasonably expected to interfere with uses in the state, the state should have and must have a numeric criterion for that. So there's sort of stricter requirements for priority pollutants. And you probably know our recommended human health criteria are for both priority and non-priority pollutants. So I'd sort of look first at that. And then --- and just, you know, ensure that West Virginia has criteria for priority pollutants and/or an explanation for not.

But if it's a non-priority pollutant, it's more at the state's discretion, you know, whether they think it's necessary to protect their uses. We always have, you know, the authority to make a determination after looking at available information that a particular

criterion is necessary for a given state, whether it's priority or non-priority. But generally, we defer to the state to decide, you know, if they need numeric criteria for non-priority pollutant.

And so I would suggest just providing that comment and making sure the state is aware of --- of that issue and then for the state to respond to that during the public comment period.

There's also the requirement for states to explain, you know, if they're not choosing to, you know, update their science when EPA comes out with new 304As. So that applies also to non-priority and priority pollutants. And so hopefully in those instances, the state would, you know, consider if they need criteria for those pollutants. And if not, explain why not.

MS. COOPER: Thank you very much.

Thanks, Erica, for jumping in there while Colleen had to go and for --- John, for your help too.

And I think this will wrap up our --- the portion of our meeting that --- that we needed you guys for. We're just --- we're going to move onto just planning for next month.

And I want to thank you wholeheartedly for making yourselves available for this. It's been a huge

help to us. And we would love to have you back in the future. And we'll send you --- we'll make sure we invite you way ahead of time like we did this time and send you some questions so you have an idea of what we're --- what we're getting at next time. But we would love to have you back.

MS. FLEISIG: All right.

Thanks, guys. Talk to you soon.

MR. HEALEY: Nice meeting you. Thanks.

MS. COOPER: Thanks Erica, John.

All right, everybody.

How do you --- How do you think that went?

MS. CROWE: That was helpful.

MS. COOPER: Yeah, I think so too. I learned a lot. And it was really, really great to hear Colleen explain that, you know, here's why --- here is why we didn't use some of that data when we had it, because it wasn't verified or it wasn't as good as the other data or it wasn't --- it wasn't good enough to be included so we had to go back to the K_{ow} or whatever. That specifically was --- was really helpful. But just having them all --- all available to ask these questions to was really great.

I think it was hard for them to come in,

even with just the few questions that --- that we sent them or --- and the questions that I sent were kind of like general idea questions. They weren't really super specific. So they braved our meeting anyway, and I'm really glad that they made it.

And again, we can invite them back at a future meeting to --- to talk about more if that's what we want to do.

I just have two more things I want to look at really quick.

This is just wrap up stuff for the end of the meeting. But we --- every time we look at this --- this slide, we talk about our goals. I didn't change it this time.

But we didn't have some discussion about it at our previous meeting, especially in regards to approvable by a legislature. I didn't change the --- the language of these goals. But I just wanted to note that we had talked about that before. And even though it is, of course, our goal and our job that we're getting together to do this to --- to make these criteria that we --- that we have proposed and any future criteria that we propose the next time approvable but also defensible at the same time.

You know, we will know that when we --- when we come to a consensus and propose something for next year, it's going to be, you know, quite defensible because we've all gone through it in great detail to understand where --- where we're coming from with these criteria.

So I just wanted to touch on this slide one more time --- or not one more time, but again --- and see if anybody had anymore comments on our work group goals.

MR. HARRIS: Yeah, I --- You know, I think I questioned --- This is Larry. I think I questioned it early on about the number one goal. And from what the EPA said today --- today, they're not influenced as the West Virginia legislature is by the users or the polluters. I don't think they are. I was going to ask that, but I thought that was too crude of a question.

But our legislature, let's face it, is not the right organization to approve these standards. It should be the EPA. So anyway, that's --- that's ---

MS. COOPER: Well, then --- yeah. And we've --- we've gone over this. I mean, we've talked about this a few times. But that's --- the way that it's set up in West Virginia is that it will go to the

legislature and they will ask us, as far as DEP and anyone else who wants to speak --- which is typically, you know, members of this group --- to speak to what has been proposed.

So they do look to us for, you know, "Does this --- Does this make sense. Did you do due diligence when you were proposing this?" You know, "How does everybody feel about it?" They'll ask those kinds of questions to us.

But ultimately, it needs to go through them. They're just --- They're just part of the process. And, of course, EPA, it also goes to them ultimately, too, after West Virginia is finished with what we are --- what we do with it.

MS. ROSSER: Laura, I'd just --- I'd just say that I'd be more comfortable with defensible to the legislature --- with defensible standards.

MS. COOPER: Okay.

MS. ROSSER: Provable.

MS. COOPER: Okay.

So if there's no more comments on our goals --- Usually, we just --- we just beleaguer number one and two. Three and four are pretty unchanged.

Protective: We want to learn and gain a

better understanding. Which we're totally onboard, we're totally doing that. I think we're meeting that with --- the last time I asked the question, and we gaining a better understanding. But this time, I'm not even going to ask because I know we are.

And then, of course, the consensus part is really important to our leadership at DEP, that we can come up with something that we all agree on on this group.

So finally, I just wanted to talk about our November meeting. November is right around the corner. And you may all recall that in November, we have Thanksgiving, which is kind of like a weeklong holiday for many people. So I am just staying away from that week altogether even though we like to meet at the end of the month.

So would November the 18th, which is the Wednesday before that week, work for everyone?

And it would have to be 9:00 a.m. because --- I can't remember, but there's something on my calendar that I can't do. I wasn't available at 11:00. So it would have to be 9:00 to 11:00.

If we have no objections --- And if we have any objections to this cute little diagram that I

added --- I'm kind of sick of the circle-headed people, so we're going to try and get into some more colorful icons.

MS. HENTHORN: Laura, I'm likely to be late. I'll still be getting Mom up. So just as long as you guys know that I'll probably be five or so minutes late, five or ten minutes late.

MS. COOPER: Of course.

MS. HENTHORN: Yeah.

MS. COOPER: Oh, and also, we need to --- I mean, I can lay this out myself.

But if anybody has any input on what exactly we should cover in the next meeting? That's probably a more important question even.

MS. ROSSER: Well, I would like a better understanding from DEP's perspective on what the EPA person is talking about, priority pollutants and how you all determine those versus not.

MS. COOPER: Oh.

Well, priority pollutants aren't determined by the states. They're defined, I think, by the EPA.

MS. ROSSER: Okay.

Then I -- honestly, I'd ---

MS. COOPER: Those are just --- Those are pollutants that are --- that are --- that are flagged as priority pollutants. Somebody else might be able to speak to this a little bit better. But just off the top of my head, I am pretty sure that if we look at the human health criteria table, I think there is a notation in there as to which ones are priority pollutants. And I'm --- I am not certain, but I --- well, I'm not going to say it because we just have to look at them. But we will look the next time we will talk about priority pollutants. We'll talk about which ones are and which ones aren't.

MS. ROSSER: Right.

And --- And alongside with what West Virginia has in its standards and what it doesn't. Maybe a guide to at least our interests and to addressing ---

MS. COOPER: Okay.

MS. ROSSER: --- ones that aren't.

MS. COOPER: All right.

I think that's --- I think that's a good topic for --- for next month --- three weeks from now if there are no major objections to that.

The other thing that I was thinking that it might be worth our while is to actually look at the

study that has informed that major change in the IRIS database to benzo(a)pyrene, which affects several chemicals.

Unless we think that it's just not worth our effort or our time or maybe ---

When --- When we --- When I started this group, you know, there was a possibility that we would be looking at tons and tons of research papers. But we just don't -- we don't have the capacity to do that specifically.

But if we grab one, specifically the one study that has informed the IRIS database to have revised in the last few years benzo(a)pyrene, maybe that would be kind of like when we went through the chemical --- the chemical criteria document. We could go through this research study and get a sense of what did they do, what did they find, and how did that change so --- so much the toxicity for that --- that chemical which also informed several others.

Because I think that's something that we're really going to want to look at as we move forward. Because the IRIS database is the accepted database that's used for toxicity. And if it's been updated, then that's --- that's a change that EPA would --- and as they said

today, they would --- they would completely accept us making a revision to any of these criteria based on that.

So if you think it'd be worth our time to go through that study as part --- like maybe half --- of the meeting next time?

MR. BRITTAIN: I think so.

MS. COOPER: I know you would think so, Ross.

MS. CROWE: Are you going to be able to send it out ahead of time so we have time to review it before the meeting?

MS. COOPER: I am going to say yes. I think that when I --- my study, I should be able to share it with a few people. But I'm not really sure as to the rights and how that works. I know Jenny is more familiar with that. But she is from a different perspective and a private group. I would --- I don't know that.

Do you have any idea about that, Ross? Sharing studies that you've purchased?

MR. BRITTAIN: Sharing --- Yeah. That --- That's the thing. Sharing studies for a general workgroup I think would probably be oaky. But, you know, it's a fine line.

One thing you can definitely do is you can

go to the IRIS database. They will have in the IRIS database --- specifically look at their summary and their report --- their latest report, their report for benzo(a)pyrene.

They will --- In that summary will list the criterion that they used to make any of their decisions. And that's publically available information. Just go to the IRIS database, type in benzo(a)pyrene, and then you'll get all the information on benzo(a)pyrene to come up. And then there will be several documents if you start looking through that.

Now, if --- Now, that specific report on the other hand, you have, you know, proprietary scientific information in terms of whether or not you can share that ---

MS. COOPER: Do we feel like it would be a better use of our time to examine the IRIS database, especially with benzo(a)pyrene?

MR. BRITTAIN: That's what --- That's one of the things I was going to say, is that we might want to just look at --- start off by looking at the IRIS report on --- on that particular chemical, benzo(a)pyrene.

MS. COOPER: Right.

MR. BRITTAIN: Because --- Because we need to understand ---

MS. COOPER: Okay.

MR. BRITTAIN: --- we need to understand what IRIS is and how this is --- We don't even understand how IRIS works, how that whole procedure ---

MS. COOPER: Yeah.

And that would help us learn how --- how that database works and how to find things in it. Because we'll be using it for that purpose.

MR. BRITTAIN: Yeah.

Because otherwise, you'll be looking at that study, saying, "Well, this is all great information, but what does it mean?"

MS. COOPER: How does it ---

MR. BRITTAIN: Yeah.

MS. COOPER: How does that sound?

MR. HARRIS: It sounds good if you get it --- a link to us ---

MR. BRITTAIN: Yeah.

MS. COOPER: Yeah.

MR. HARRIS: --- sooner than a night before the meeting.

MS. HENTHORN: And I'll commit to trying.

I'll look and see whether it's something that I can get, extract, and send. And whether I'm going to hit a legal boundary with that particular study or not. Some are public, some are not.

MR. BRITTAIN: Yeah.

MS. HENTHORN: So I'll see what I can do there. I'll at least look and see if I can do it legally.

MS. COOPER: Yeah.

MS. HENTHORN: And if not, I think there's an exception that you're allowed to take excerpts from the study. So I'll look to see if I can find that there as well. I can't remember how that goes. It's been too long since I looked at that.

MS. COOPER: Okay.

MS. HENTHORN: I can at least pull the study and see whether it's something that can be shared ---

MS. COOPER: Right.

MS. HENTHORN: --- or if it’s in the public domain.

MS. COOPER: Thank you.

MR. BRITTAIN: If you had to pay for it, it's not in the public domain.

MS. COOPER: And I haven't got it yet. It's just one of those things that kind of irks me, that I should be able to share whatever I have. But at the same time, you know, somebody spent a lot of their time and their effort and money on that research and they need to be paid for it too. So I don't want to just say I email it out to everybody and then once I did that you could email it to everybody in your whole --- you know, if you wanted to. So I don't want to overshare.

MR. BRITTAIN: Laura, I have another option for you.

Are you familiar with the inter-library loan ---

MS. COOPER: Yeah.

MR. BRITTAIN: --- capabilities?

What we may be able to do is see if DEP has access. And Scott Mandirola may know --- may know about this. But whether or not we have access to, say, WVU's inter-library loan capability. In which case, we would have pre-access to that ---

MS. COOPER: Okay.

MR. BRITTAIN: --- via inter-library loan from a major --- one of our major universities ---

MS. COOPER: Okay.

MR. BRITTAIN: --- as a paid entity.

MS. COOPER: So let's ---

MR. BRITTAIN: The data ---

MS. COOPER: Let's say, though, that for the next meeting, we will talk about the topic that Angie brought up as far as what West Virginia has in standard and what we don't, how that relates to priority pollutants. And then we will look at the IRIS database and see their document for benzo(a)pyrene and how they went through that. And way ahead of time, I will send out links to that IRIS database so you can get right to where --- where we're going to be looking at it. And I think that will --- that will fill two hours in November pretty easily.

MR. BRITTAIN: Yeah.

MS. COOPER: And we'll move on from there.

MR. BRITTAIN: Yeah.

And the priority pollutants, there's like 126 of them. It started off at like 128. They removed a couple for various reasons. But there's a lot of --- there are more priority pollutants than there are actual human health criteria.

MS. COOPER: Okay.

MR. BRITTAIN: So there is a lot of

overlap.

MS. COOPER: Okay. All right.

Do we have anything else to wrap up for today?

MS. CROWE: I just want to put a placeholder in for our December meeting.

MS. COOPER: Okay.

MS. CROWE: I would be interested in seeing more of what --- The EPA briefly mentioned Colorado and how they were handling PAHs. And then if the Delaware BAFs are out, maybe we could schedule that for our December meeting.

MS. COOPER: Yes.

I think that --- I think we'll know more from Delaware by then. I think so.

I was a little discouraged with --- with what Natalie told us today. It sounded a little less certain that Delaware is going to put them out for public comment in a couple of weeks. But that's generally the idea that I get from them.

I am not sure if they would share anything with us before that, but I can check with them.

So by December, that stuff should have been out to public comment unless they have some kind of

hold up in Delaware, which happens, you know, with various states when they're dealing with stuff like that. So I am not sure. But we can try to learn more from Delaware BAFs in the December meeting and see if we can find out more from the EPA on the questions --- the other questions we had.

All right.

Do we have anything else?

UNIDENTIFIED MALE: Sorry. It took me forever to find the un-mute button.

MS. COOPER: I wasn't sure if you were trying to talk or not, but ---

UNIDENTIFIED MALE: I know, I can't switch. I'm only on 80 different platforms every day. I was on School Achieve for a couple minutes. Sorry.

To the Delaware thing, I just talked to the general counsel for DEP's group. So let me call him back Friday. And I can just point blank ask him that question and see if he knows.

MS. COOPER: Okay.

Thank you.

All right.

If there is nothing else, I'll go ahead and put the November meeting on our calendar and start

looking at the IRIS database to send you guys information that you can review before then. But if you don't have time to review, we'll be ready to show you all about it during the November meeting.

MR. BRITTAIN: Laura, I am going to send you the links.

MS. COOPER: Great.

MR. BRITTAIN: And the PDF of the IRIS summary document for benzo(a)pyrene.

MS. COOPER: Perfect. Thank you.

MR. BRITTAIN: Uh-huh (yes).

MS. COOPER: I wanted to ask Kara really quick: Did you have any questions on any words that we used or that you wanted to ask now? Or we could follow-up later.

COURT REPORTER: So your slideshow was really helpful with that.

Is it tropic level or trophic level?

MS. COOPER: Trophic, with a P-H.

COURT REPORTER: All right.

Got it. I think --- yeah. That's the only one I was questioning about.

MS. COOPER: Yeah.

And I don't know if you --- I can send you

the PDF of the slides so you can look at them again. Probably all the chemicals that we mentioned today were on those slides, so you can see how they're spelled or whatnot.

COURT REPORTER: Yeah.

I kept track of it. I have it all written down.

MS. COOPER: Okay. All right.

Thank you so much.

COURT REPORTER: No problem.

MS. COOPER: All right.

I think that's all --- if anybody else has anything else. Thank you all for being here today. Thanks for being cordial with EPA. I am sure they were all grateful that it all went well. It's a little scary for them to get on with just random people.

So thank you all very much, and have a great Wednesday.

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MEETING CONCLUDED AT 11:48 A.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. This notarial act involved the use of communication technology.

Kara M. West,

Court Reporter