



Washington State Liquor and Cannabis Board

Washington State Liquor and Cannabis Board Cannabinoid Science Work Group Meeting

*Thursday, April 4th from 10:00 a.m. to 11:00 a.m.
The meeting was convened via Teams*

Meeting Minutes

AGENDA ITEM 1: CALL TO ORDER AND ROLL CALL – 10:05AM

Sarah Okey opened the discussion.

Present: Carter, Taylor (CSWG member)
Gang, David (CSWG member)
Kildahl, Jeff (LCB)
Laflamme, Denise (LCB)
McLaughlin, Ryan (CSWG member)
Murray, Sarah (CSWG member)
Nordhorn, Justin (LCB)
Okey, Sarah (LCB)
Peck, Angela (LCB)
Tonani, Jessica (CSWG member)
Trumball, Kari (LCB)

Absent: Beecher, Chris (CSWG member)
Douglass, Brad (CSWG member)
Klein, Tracy (CSWG member)
Sams, Richard (CSWG member)
Moody, Holly (CSWG member)

AGENDA ITEM 2: DECEMBER 7, 2023 MINUTES AND ACTIVITY REVIEW

Sarah Okey asked group members to offer changes/concerns regarding the December 7, 2023, meeting minutes. There were no revisions offered by email before the meeting or during the meeting, and the group accepted meeting minutes as drafted.

AGENDA ITEM 3: DEFINING ‘HIGH THC’

So I am just going to briefly overview each topic discussion just in case anybody who is listening to this after the recording has a context and just for us to get all on the same

page. High THC has been receiving a lot of increased attention recently across various stakeholders, public health professionals, researchers, regulators, both within Washington and across the United States.

The primary point of discussion is that higher THC is associated with greater risks relative to lower THC, and this is particularly when we are talking about people who are at risk, so people who have developing brains, youth, young adults, adolescents, those with underlying health problems, like people who have a family history with psychosis or who have mental or physical health problems as well and yet this topic is very -- and there is also research looking at medical and therapeutic effects of higher versus lower THC. This topic is nuanced because depending on how you look at whatever it is that you are looking at, whether it is differences in THC concentrations, route of administration, how frequently you are using, there can be a lot of variations in what is determining higher versus lower THC.

And across hundreds of studies -- and this study actually looked at over 450 studies that examined higher versus lower THC, they found that there was so much variability on the methodology of high versus low THC. And so in order for us to guide further exploration of this topic guide, whether there are policy options or where research needs to focus in on, it is really important to figure out what it is that we are referring to when we say high THC. So with that being said, these are the discussion questions that were sent to your emails. And I want to start out with just a very broad question of given your background and expertise, do you think that creating a definition of high THC is feasible?

Jessica Tonani: I would say I think one of the biggest issues I hear a lot is we have to be very careful when we create these definitions that we are not enabling a system where dilution leads to larger health issues, kind of the vape gate situations where people are diluting products to meet certain categories. So one of the things when you ask is it feasible for somebody to just put a number or a stake in the ground? It probably is, but is that the best for safety? I think that is one of the biggest questions in my mind. How do we enable people access to safe products without creating more safety hurdles? If that makes sense.

Sarah Okey: Can you talk a little bit more about diluting? What you mean by that and how that might impact public safety or health?

Jessica Tonani: Yeah. So, for example, if you were to say, hey, anything -- and I am just going to make up a number. I know that there are different numbers, but let's say that you were to say, hey, anything over 50% concentration is high THC and banned or something like that, I think you would open up a system by which vape carts and things

would still exist, but the question is what other dilutants would people put in those to meet that threshold? And so I would just say that we know in general concentrated material is- from an inhalation perspective- relatively safe. We know that when you put vitamin E acetate and different things in vape carts that is not safe. There is a lot in between that. And when I say safe, I am not talking about studies about long-term effects or anything like that, I am talking about immediate inhalation effects. And so my concern is are there mechanisms that we approach this via tax or different mechanisms that don't put people into situations that they are creating products that may have larger health issues than the ones that we are trying to tackle? Does that make sense?

Sarah Okey: That does. Thank you, Jessica.

Sarah Murray: So what if we -- I mean, I feel like defining high THC -- like, what if we defined it as instead of like a number but rather we could define it as like what people are using, like an oil, a wax, something like that is a high THC as opposed to like a flower, which would be a lower THC, or something like that. Because when I am working with patients, I feel like I try to steer them away from concentrates because drinking hard liquor is worse for you than having one beer if you don't know how to regulate those sorts of things, and so having it be less of a number and more of a substance-based thing I can steer people toward a lower concentration to try first rather than like a higher concentration without saying, "Well, go for the 15% over the 30." Because I feel like we should avoid like labeling THC.

People come into the shop, and they are like, "I want the one that is going to get me high." And -- as a healthcare person, I want to try to help people not just go for the one that is going to get them high but the one that is going to help them the most, and maybe something like that would be a better way to define it. I know less about how things are made and more about how people are consuming them, but if we could do it in a substance-based way rather than like a number, maybe that would be helpful.

Sarah Okey: Sarah, you bring up a really good point. When looking at how people have previously defined high THC originally, it was kind of based on those products differentiations. Concentrates are the ones that are higher THC products. There is also a further discussion within what you are saying. Theoretically, if you have the same amount of THC in one product versus another product, flower versus concentrates, would there be differences in risk and safety profiles as well?

Taylor Carter: Yes, a couple of things on it. I think from my perspective and in my research -- I mean, granted, it is mice, but I use a dose of 25 mg/kg, which would be comparable to 2000 mg injected and again study the effects on the immune system. So

for me, my definition of high THC doesn't even fit within this realm because I am looking at it, basically, from a toxicology standpoint outside of the immune function. So taking it back to humans, I almost view it as a high THC would be per serving. Because I think the question is, if the goal of it is to have an actual health impact, what is the audience that you are targeting? Meaning is it people who are not conscious of what they are buying to know how much they should consume? Because if you are looking at it from a health perspective, a lot of things potentially considered high THC don't necessarily have a physiological harmful impact.

Theoretically, if there are pesticides or anything like that. But if we are just calling it high THC, that THC dose is probably not going to have a physiological harmful effect necessarily. So I really like the idea of THC per serving because then it is kind of letting people know if it is high THC per serving, say like one puff of a vapor edible or anything like that, it is kind of letting them know that this is a stronger product, and potentially keeping them from the mental side effects that would come along with a high THC dose, if that is really like the target audience. But yeah, I guess for me a high THC dose is much higher than what most people would consider.

Sarah Okey: When you say "THC per serving," can you go a little bit more into depth about what you mean by that?

Taylor Carter: Sure. So there are a lot of papers that have come out in the last two years. We have devices that can kind of mirror a breath like breathing, and it can measure how much THC is being consumed per vape puff. There is a study that was using different voltage vape pens, and they found that most of the vape pens they tested were between 9 mg and 16 mg of THC per puff. I am guessing you could use the same machine and measure per leaf how much THC is being consumed. Because the thing to keep in mind here is if you are looking at health, the more of a product you have to consume you are going to end up getting more of the byproducts. In that one paper you [Sarah Okey] sent in the email the second paper, they noted that when the users were using concentrates, they took half the number of puffs, and they were allowed to consume as much as they wanted.

And there is another study they referenced in their discussion that they saw the same thing during a study when they were allowed to smoke as much as they want that people consumed half the amount of a concentrate. And although you are not feeling the THC right away, there are receptors like TRPV1 and other receptors in your lung that basically can signal that you have consumed a lot of a product. So there may be some sort of tie in where just because something is higher THC, the body may be like okay, I am okay at this dosage. So there is kind of this evidence is starting to emerge as

they are doing more of these consumption studies that a higher THC product may result in less usage just natively, even in an open use experiment where they can consume as much as they want. So that is kind of a highlight of the opposite side of the coin, where it is like maybe some of these products don't necessarily result in a worse outcome.

If the user is aware of what is going on, which goes back to the serving, someone may not know what is going on, go into a store and buy a concentrate, but if the little bottle said 50 servings are within this, maybe that person would be conscious and be like, Oh, I am not supposed to consume half of this product in one sitting.

Sarah Okey: Thanks, Taylor.

Ryan McLaughlin: Those are really great points, and I think we are identifying this as a super complex issue, particularly because we are just initially starting to talk about smoking versus vaping and trying to distinguish between that. But what we are really talking about from increasing a health standpoint for users, edibles are the one that induce the most emergency room visits and are most likely to induce overdose, and that has really very little to do with how much THC. Well, I mean, it is how much THC, but it is their inability to self titrate like it was just mentioned before. It is like if you are using high-concentrate products, you are allowed you are --the pharmacokinetics enable you to self-titrate in a way that is much safer in many ways than edibles, and so, I don't know. I mean in some ways I think part of it is not just the THC, but like what Jessica said, it is like what you are mixing or diluting all of these concentrates with that really need to be heavily regulated. I don't see THC to be necessarily always the bad guy, but it certainly can be. Anyway, that is all my point.

Sarah Okey: And so Brad, I am going to get to you in a second. I am curious about with the studies on titration. From my understanding, people tend to titrate, and there are other studies that showcase that even when people titrate with higher concentrated products, they have more like concentration in blood levels. Any thoughts about that specifically?

Ryan McLaughlin: I mean I am very close with my wife, Dr. Cuttler, who does research and has worked with high THC products using a Zoom approach. I mean, you might be citing some of her work when you are looking at some of this stuff, actually, and so-- although she doesn't -- hasn't measured THC quantity -- or concentrations, per se, from the different methods of use, she doesn't see any greater cognitive impairing effects from people who are using concentrates versus flower. It doesn't seem to really support that, at least at that level from a behavioral or cognitive perspective.

Sarah Okey: Okay. Thank you, Ryan. Brad?

Brad Douglass: Thank you, Sarah. I am going to echo a bit of what Taylor had to say in suggesting that it may be more feasible and, perhaps, effective to define high THC in terms of the amount of THC consumed or used over a period of time rather than by defining it based on the product that the THC is in.

Sarah Okey: So when you are thinking about high THC consumed over a period of time, are you really speaking to providing guidelines based on if you are using X, Y, or Z amounts during the day or throughout the week, kind of like what we have with standard drinks of alcohol with, like, 5+ drinks for binge drinking for males per night? Is that what you are what you are saying, Brad?

Brad Douglass: That is exactly what I am thinking. That is sort of the heavy use terminology used in Alcohol models. I think that is more instructive to folks who are looking to minimize their risk.

Sarah Okey: Thank you. Ryan, did you have your hand up?

Ryan McLaughlin: No. I forgot to take it down from the last time. Sorry.

Sarah Okey: I see something in the chat. Sarah, would you mind sharing what you wrote?

Sarah Murray: So as we are discussing, when I have older folks who come in and they are having pain and then they are asking me like, I went to the store, and I didn't know what to buy. I steer them actually towards the edibles, the gummy ones, in particular, because they tend to cap their THC at 20 mg per edible, and I am, like, cut it in half if you want, but that way if they take it at night and they wake up and they are dizzy -- then they know that more is not going to be good for them. And so because that is kind of a problem with the older, like the boomer population, they want to relieve pain, and they don't really want to smoke it. They don't really know what to do, and so the gummy edible is kind of an easy way for me to give them a start. And so I like what people are saying where maybe like -- the alcohol has different concentrations when people are buying it, and so they -- Washington labels their alcohol, like, if you drink, here's your limit, and if you drink this much and you go over this limit, then it is bad.

So maybe we could do something like that instead, like on a package, like Taylor was saying. This is this many servings per package. If you take half the package, you are going to be pretty drunk or whatever, like, as opposed to having one serving. And that

seems to make sense to me. And like a lay person, like, I went to the store, and I didn't know what to buy.

Sarah Okey: Thank you. Jessica.

Jessica Tonani: I agree, Sarah and Brad and what people are saying, and I think the one thing that kind of gets lost to some degree is concentrates aren't necessarily like a new thing. We know people have kiefed this plant for hundreds if not thousands of years. So we do know that there are certain ways that people have consumed this plant and not seen some of the issues that may be occurring now. And so I do think like education may be a good path and understanding how much of something that people should consume and not necessarily potentially the format that it is being delivered in, as Ryan mentioned.

Sarah Okey: So speaking to that point and, Taylor, you mentioned this in your email to me. Alcohol is pretty standard because it is all liquid, but with cannabis, all of the different methods and even one someone's puff differs from another person's puff based on a variety of factors, so that just seems very complicated to be able to determine or say like this is one serving when there are so many differences. Edibles feels a little bit easier to standardize, but what about for smoking or vaping?

Taylor Carter: I think, again, it would come down to kind of those studies that use the simulated breathing device and then measurement, which again, are out there. And it kind of goes into that question of like, what levels are people willing to go into to push through some of these policies. That would kind of be the way stuff would have to be tested, basically, to see what the dosage would be or relative. I mean, it is kind of tough. You wouldn't be able to test every product that way. But over time there could be some sort of equation that summarizes it pretty well based on maybe viscosity of the liquid based on THC content. You can kind of determine what the average puff would be. It is tough. I mean, again, that is where this gets so complex. How would that be calculated? And obviously, within any of this stuff anytime you come up with an equation or anything, people are going to figure out a way to get around it, so it is really tough.

But going back to the alcohol thing, it is like alcohol [audio cuts out] percent solution is completely different than a dry weight percent. That is how, in South Carolina, some of the stores here get away with selling very high THC product because based on the hemp law, it can be 0.3%, but that in solution is much higher than dry weight, so it is tough. But again, I think if you could figure out a way to calculate the per serving, then it answers the question moving forward. It is just getting to that initial point would be the difficulty.

Sarah Okey: And we currently don't really have -- and correct me if I am wrong -- but do we have a method of determining a serving size right now?

Sarah Murray: Do I did a project on this at the clinic that I work at, and I took my pinky finger and said, so the top of my pinky finger is about 100 mg of flower, and three of those four times a day is like a ceiling limit for a dose is what I -- is because when people are smoking more than that, in my experience, they are not really getting any effect after that as much as they are getting, like, side effects more than anything. But like, that is totally unverified, and I didn't use a tool to measure that. That is just kind of what I have seen in my practice over the years in an inhalation sort of thing. There is a lab test that I can order for patients that will give them a number for, like, their blood concentration of THC. Like they can be at like 114 or like 12 or something like that. And if there is -- I don't know if there is literature out there that provides a, like, You are impaired after this number, like 300 or something. But we could use that as like a definition for like an upper level of high THC. Like if you are going to use this product and it puts your blood level over -- like you know, in alcohol, it is 0.08. If it puts it over that, then we can label that as like high THC, maybe.

Sarah Okey: Thank you. Ryan?

Ryan McLaughlin: Yeah. I think the problem with that is we often want to equate blood levels of THC with intoxication or impairment, but really, it is not blood levels, blood levels actually don't really correlate with cognitive or any sort of impairment, it is brain levels of THC that you really need. So I mean, just because you have a lot or a relatively little amount of THC circulating through your body doesn't necessarily mean that you are going to be more or less impaired or be more or less at risk of having adverse effects. And I just, I am worried a little bit about trying to draw too many relationships with alcohol because I think that cannabis and alcohol are just an entirely separate beasts, that we can't just say that a concentrate is the same as drinking 40% alcohol. It is just very different in my opinion based on the pharmacokinetics of smoking versus drinking or eating something.

Sarah Okey: Thank you.

David Gang: Yeah. Ryan said a lot of what I was going to say. I kind of figured he would. But just to add to that, briefly, a number of states had had some values on that the laws on the books that were based on values of blood levels, most of those have been removed because they found that they were just not able to demonstrate any kind of connection, like Ryan said, there to a correlation to actual impairment of function.

There is a lot of data that is coming out very recently that suggests that their liver function is different than every individual. Liver function has a big impact on longevity of these compounds in the body and their impact. Individual BMI or basically how fat you are, hate to say it that way, but level of fat within the body has an impact as well, and all of those things come into play because those are tissues that are affecting the levels of these cannabinoids and their availability, and the ability that they end up in the brain, like Ryan talked about. Those are all very individual. There is nothing like -- alcohol is a lot.

There is individuality there as well, but it gets a lot more consistent in these broad categories. The data that we are getting now are some clinical work that is coming out is suggesting exactly what Ryan said, that there is really no good correlation there. It is really hard to come up with a number that it is going to work for people. We have got to -- I don't know what the solution is, though. Again, it is going to take a little bit of time and effort to try to figure out what we can identify as some kind of quantifiable marker or something that connects a person's impairment with whatever their consumption level is going to be. And I think we are going to have a hard time coming up with a blood test, urine test, or anything like that, or a breathalyzer, or anything like that that is been. People have tried to do that for a dozen years, and none of those things have actually panned out. You see news stories about it, and they hype it a few universe. There was one just a few months ago where somebody claimed they had something again, and it is not going to work out.

I looked at it. It is going to be just like everything else people have come up with. It is really not going to lead to something that is really applicable in the field or even in a political setting. So it is. This is a really big problem, and I don't know. I don't know what the answers are.

Sarah Okey: Yeah, I have also seen like the druid that looks at like impairment, but yeah, I hear what you are saying. Jessica?

Jessica Tonani: You know, one of the things that I think that has made this a really difficult discussion at the Legislature level is it appears -- and even as part of our discussion -- it is not necessarily the product by design is enabling like everybody to have an issue. It just making it easier for certain people to have an issue, I think, analogous to like alcohol, vodka is easier to abuse probably than beer just based on volume, you can consume less and that there is a lot of kind of educational deficit around the products at a consumer level. So I just worry that by trying to approach it from like a definition of high THC, we may not be addressing the problem, which is really that certain people are utilizing these products and having issues with them, and

maybe the people having the biggest issues are actually the people that are misusing the products and how do we help in education?

And I am not saying we don't address any of the product situation. I am just asking how do we actually get to this so that we are not creating larger problems? And we are addressing the problem, which is that certain people are being harmed by utilizing these products and maybe just by misusing the product. So how do we address the issue, which may not be just a defining what a high THC is? I guess that is what I am saying.

Sarah Okey: Thanks, Jessica. Ryan?

Ryan McLaughlin: Yeah, just to really echo what Jessica said, I think those are great points. And Jessica, you keep coming back to this idea of education, and I think that that is really the most important thing here is not necessarily setting a limit and saying, "Oh, we can't sell THC content above a certain level because that is..." You know, I think that is not necessarily even quite grounded in empirical evidence yet. We don't really have the science to back up that even just having high THC in and of itself is going to be more deleterious in terms of mental health or cognitive health outcomes. I know, there are certainly some correlational studies that might suggest that or there is some evidence, maybe, but until the science comes out I just -- I don't -- I always feel like when we are trying to put a cap on things or we are trying to prevent people from using things, it just creates alternatives for them to go and bypass the regulations.

It is almost like you put something for this like you are challenging people to circumvent the system in some ways, and so in many ways I just think we all know that a lot of people are very comfortable with using cannabis these days. It has become a lot more mainstream and a lot less stigmatized. I think just now that we have so many more people using it more people are experimenting with it, we really need to emphasize just trying to teach people and educate people about what these harms actually are and what we know and what we don't actually know yet because there is a lot that we don't know, but that is important when we are trying to make legislation. We can't just make legislation based on something that we kind of have a hunch on.

Sarah Okey: Thank you, Ryan. So we will go with David, and then Tracy, and then we'll move on to our second topic.

David Gang: Yeah, really quick. I agree with everything about the education. The concern I have is we always have to think, I guess, like the lowest common denominator is kind of what we have to look at here. A lot of people will become educated, but a lot of people won't get the news. They won't hear about it, especially if you have got

children involved. And this is what I mean. This is --you hear about the stories where a lot of it is around delta-8 lately, right? Kids that end up in the hospital because they get exposed. They eat a whole package of gummies or something that has 250 mg of delta-8 in it. That was one that just happened I heard about this last week. And little kids aren't going to be educated on this, so how do we deal with that? That is something that needs -- I think that is, and that is what people are going to bring up as an issue. You know? So how do we deal with that? That is something that needs to be considered is coming up with an answer to that one.

Sarah Okey: Thank you, Tracy.

Tracy Klein: And just really quickly, I think that at least from my perspective that the state is a little bit conflicted about what its role is in terms of education. I mean, Washington was the first state to create the role of the medical marijuana consultant. And I have done some research on this as well, and there wasn't ever any kind of evaluation of what that role should be. Was it effective? Was the education that people were getting do anything? And the default. I mean, that is the person that they are interfacing with, and the default for that is the clinician. And, again, I have published research in this area. The clinicians are not comfortable with it, don't want to do it, think it's a liability for them. There are educational barriers within the institutions to doing this work with the clinicians, their barriers with the licensing boards. So I think if we want to talk about having more education, we really need to understand what the state's role is in that. And I would start with that medical marijuana consultant role, since Washington does certify them.

Sarah Okey: Thank you. All right, Taylor.

Taylor Carter: I will be really quick on this. The one thing I kind of want to -- that I think about sometimes in relation to this is like peanut butter. So there is a group of people that if they consume peanut butter, they die. There are kids at elementary schools and if they consume peanut butter, they die. Yet, we still allow peanut butter to be sold in stores. So there is this concept of due to genetic mutations, people can be at super high risk for a product when the general public that long-term toxicity is not that high. So there are other differences. Obviously, this is sometimes viewed as a drug and things like that, but there are other instances where a product is readily available that in a select group of people with a genetic mutation can have extremely bad side effects. So again, if we are looking at it from the potential role in schizophrenia and things, there are some things out there where a small group is susceptible in a way that other people are not, and that could be -- you know, it doesn't always have to be mirrored in the way of like alcohol or other substances.

You can look at the other ways of how people are distinguished in the use or consumption of an object and how that is kind of looked at and regulated and discussed in the way that products say. Like if you had made in a facility with the peanuts or house, not necessarily putting those words but just the concept that there may be other systems out there that could be mirrored or looked at on this topic.

AGENDA ITEM 4: CANNABIS PRODUCT STABILITY

Sarah Okey: Thank you. Let's move onto the second topic. This was really brought out of a recently accepted rule petition to look at extending the expiration date of a certificate of analysis from 12 months to 18 months. And this petition has kind of brought attention to cannabis product quality and safety measures. And within the past several months there have also been questions and conversations about how various environmental factors like packaging and light can impact the cannabis product, the stability across time, and degradation. And obviously there are so many different factors like harvesting, and drying, and curing, and transportation that can all impact the quality of cannabis products and safety and how long it is a stable across time.

So again, to further guide exploration in terms of what might be the best steps to move forward with this, these are the discussion questions that you saw from the previous email that was sent out last week. So to start off this conversation, when you hear about stability of cannabis products, what initially comes to mind in terms of the biggest factors to pay attention to?

Jessica Tonani: Sarah, am I right in remembering that this is for flower only the stability, or is it edibles as well?

Sarah Okey: That is a good question. And I am curious when you are thinking about the differences of flower versus edible if there are particular overlaps and/or differences between the two that you are thinking of?

Jessica Tonani: In my mind, and I open others feedback on this, I think they have different potential concerns, I would say. So I think that as far as like cannabinoid degradation, the degradation of the cannabinoids is relatively safe, and I guess it becomes a question of whether the consumers are getting what they want in storage conditions. But I think there is a world in which people can store flower very safely for long periods of time and, quite frankly, edibles as well. I think the difference becomes kind of food safety concerns and exploration of other ingredients and things like that in edible formats. And so that is why I asked is I think they just are different buckets as far as like mainly the microbial concerns, but I open it up to other people.

Sarah Okey: Thank you. Yes, you are specifically saying that they can both last for long periods of time, but with edibles you are now in entering other food products that might differ. Okay, makes sense. So then what specifically about flower? I am curious, when you say long periods of time, can you give a time estimation generally speaking?

Jessica Tonani: I think some of the literature I have seen is if it is cured properly and stored in a cool condition, a couple of years, but I am open to other people that may have seen different literature. And a lot of it has to do with how it is stored. And know Brad has his hand. He has ran a testing lab in this space. He probably has more feedback on it.

Sarah Okey: Yes, please, Brad Douglass.

Brad Douglass: Thank you, Sarah. Thank you, Jessica. My understanding with either flower or a lot of cannabis products themselves the degradation generally doesn't create a hazard with the possible exception of what Jessica was alluding to and talking about, which is some microbiological concerns. But in general, if you have degradation of cannabinoids, you might have a small amount of CBN or things like that, but you are not seeing the introduction of any of the contaminants that are being tested for in cannabis products. You are not introducing pesticides. You are not introducing heavy metals. And for me, if there is no hazard that is being introduced, there is no safety concern and, therefore, there shouldn't be any concern with policy in terms of the length of C of A validity.

Sarah Okey: Thank you. So it is not so much about the safety, it is more so about the cannabinoid concentration across time. Am I hearing that correctly?

Brad Douglass: Yeah. In my opinion, there is that any small changes that may occur don't present a hazard, so it doesn't change the safety profile, so therefore they don't matter.

Sarah Okey: Thank you.

Sarah Murray: In my anecdotal experience, untrimmed flower on the stem can be stored for forever without having much of anything happen to it. And so like maybe putting more regular, like looking at the way that people are storing their flower is maybe more important than finding out what happens to it later on because it seems like not a whole lot happens to it, and we could maybe focus on like if the state is going to regulate something, they could maybe have visitors check out where people are holding their

flower instead of trying to define like well you can only have it for this amount of time, and you can only do these things. You could ask is it in a closed, unlit spot? Is it pretty much cool? Is it pretty much whatever this, and then just kind of leave it at that rather than trying to bring in anymore complicating factors?

Sarah Okey: So then a follow up question to that --can you go a little bit more into detail about the specific storage factors that really play a large role?

Sarah Murray: Honestly, like we have herb stored that has been here a long time, and it is still exactly the same as it was 7 to 10 years ago. It is just on its stick and when we want to use it, we put it in a jar with a little bit of tortilla, and it opens the flower up and it is ready to use and is exactly same as it was 10 years ago when it was grown. So I feel like there isn't a lot of degradation things happening things changing with it that way.

Sarah Okey: Jessica?

Jessica Tonani: I think that the things that you need to look for kind of like heat and light. You know light will lead to some degradation, heat, and things like humidity. I mean it is a plant. If it is too hot, too humid, you can get things like microbial growth and those kinds of things pop up on it. So cool and dark. David, I know you popped your head up. Sorry.

David Gang: Yeah, you covered what I was going to say. Cool, dark, and dry is always best for everything. You can't always do that, though, so the cooler, the darker, the dryer is going to be better for longevity.

Sarah Okey: Cooler, darker, and drier. Are there certain limits between cool, dark, and dry- is there a certain limit where you are saying okay, that is a not good?

David Gang: I haven't seen data for the types of materials we are talking about be able to answer that exactly [indistinct]. That is going to take -- somebody is going to have to look at some [indistinct] on that [cross-talk] --

Sarah Okey: [Cross-talk] So then if [cross-talk] --

David Gang: [Cross-talk] I think Sarah's example here is a good one of what to kind of expect. Once you extract the compounds out and mix it with something else, then it all kind of changes, then you got whatever else is in that mix is going to potentially affect it. But then you got Brad's answer, which was the cannabinoids are going to break down into things that are less active, more benign over time. So in terms of a safety issue, you

are really looking at it like a food safety issue like the WSDA, USDA deal with, with any other kind of product that people consume. That is really kind of the space you can get to. With the cannabinoids, you are just going to be losing efficacy over time as they break down. It is not going to -- probably not going to be an issue like they say. It doesn't sound like it was an issue with safety.

Sarah Okey: Thank you, David.

Jessica Tonani: I know that this to some level I have heard from the medical community there are concerns around how fresh their products are, and I would argue that it is really what -- how they have been testing microbial and things versus freshness. Do we require a freshness date on it or a harvest date? I forget. I think that got removed. Is that? Has that been removed from packaging?

Sarah Okey: Do the state policy folks from here want to clarify that? [Cross-talk] --

Justin Nordhorn: [Cross-talk] Yeah, its option [cross-talk] --

Sarah Okey: [Cross-talk] From my understanding [cross-talk] --

Justin Nordhorn: It's optional right now. However, we do [cross-talk] --

Sarah Okey: [Cross-talk] That's something.

Justin Nordhorn: [Cross-talk] have a petition to reinstate mandatory harvest dates on labeling.

Jessica Tonani: Because one of the ways to approach this maybe to put a harvest date on, and then people can choose whether it is important to them or not. And that way if we believe that it is minor degradation or something like that is going on, but it will be safe, then people could opt to purchase older flower if they want, but they have the option of kind of knowing the date of flower if they choose to purchase newer flower.

Sarah Murray: As long as the as the consumer, as long as I would know that that product was stored or held on to in a certain way after its harvest, and then before it was given to me in the store two or three years later, like I would be fine with that. Right now, I am not sure. Like, is all that product trimmed and then sitting around and then it is going into my bag like three years later? Like, I would have a different feeling about buying a three-year old herb that way than if the person -- the factory person had it hanging in a little closet for forever, until they pulled it out to trim it to put it in the bags to

have it be sold in the store three years later. Like I feel like that is too -- it is different -- or the way it is stored makes a difference, I guess.

Jessica Tonani: I agree, Sarah, but you as a consumer would then have like the option to select which one you purchased based upon having that information, that data available for you.

Sarah Murray: Yeah. I mean as long as I like had the reassurance that it was stored properly before it was sold to me three years later, I wouldn't care, I guess, as the consumer. But if I didn't know how they stored it and, it is sitting out in their back patio for three years until they decided to bring those baggies into the store, like I feel like that would be a different situation.

Sarah Okey: Tracy?

Tracy Klein: Thanks. Just a question. I don't understand much about the literature on the degradation of the other products that are on the list. And I also know that at least in Oregon -- I am kind of between Oregon and Washington -- they can't pull products based on dates. They are just supposed to sell them in order. So there is no option to like request or look at that date.

Sarah Okey: So I am curious then, harvest date would help people become more knowledgeable about the harvest, but -- speaking to what you were saying, Sarah, if you were looking at a product and it had a harvest date, and then it had information about storage. What would you be interested in seeing?

Sarah Murray: Like if the product was stored according to standards of Washington state regulations or something, and then we could, as a body, like make sure that these products are being stored according to the way that we think they should be stored. I mean that would make sense to me, I guess.

Sarah Okey: Any other thoughts related to that?

Jessica Tonani: I think it would be easy, especially to offer something that isn't as an opt in, and then if growers or producers just opted to not opt in, they wouldn't have to, but as a consumer then you would be able to purchase product that had the ability to opt in.

Sarah Okey: I'm sorry, opt in to --

Jessica Tonani: Storage conditions. You know, [cross-talk] I think that there could be different cat -- just like you could opt in to be an organic farmer, people could opt in to green to store in certain conditions.

Sarah Okey: Thank you. And then to what Tracy, you were saying, when we are thinking about, like, concentrates are there, is it kind of the same with kind of the stability of how it is stored and degradation across time. And maybe again, Brad, you were saying that like, the cannabinoids might change slightly, but there is not really any other health or safety risks associated with concentrate storage? Tracy, I see your mouth [cross-talk] --

Tracy Klein: [Cross-talk] or topicals. You know, I know that [cross-talk] that is not really on this list, but if they are losing efficacy, then I mean to me that is a regulatory issue if people are continuing to sell something that is supposed to be effective, and there is no control over the dates. You know? Some of these things are just sitting there for years.

Sarah Okey: That is a great point. Thank you. Brad.

Brad Douglass: Thanks, Sarah. Compared to flower or plant material, concentrates generally are much more stable. They benefit [cross-talk] things that David was saying, cool, dark, and just keep things that way but, generally, concentrates are much more stable than flower. And the same applies that if there is any degradation happening, it does not appear to be introducing any sort of hazard. So there is not a safety concern that is being caused there, maybe an efficacy or a freshness issue, but it is not a safety issue.

Sarah Okey: [Cross-talk].

Tracy Klein: [Cross-talk] Have you seen anything about topicals related to that, Brad Douglass?

Brad Douglass: I have not, no.

Sarah Murray: I found unadulterated flower to be very stable. If it is just chopped and hung, it stays exactly the way it is until it is manipulated.

Sarah Okey: Okay. Any other last thoughts on this topic? Okay. So just as a quick recap from these conversations from the first topic related to defining high THC, my takeaways are right now there are so many factors that creating this strict definition of

what high THC is might not be feasible because there are so many factors that influence how much THC is being entered into the body and then whether and to what extent that produces risks for individuals, both on the short-term and on the long-term. Education is super important. To provide more education that is evidence-based potentially looking at factors related to what is considered heavy use and frequency of use across time and then potentially also looking at whether there is an ability to talk about servings per container based on vaping and smoking and edibles, although that is also very complicated. Is there anything that I missed or that was another important piece that should be a main takeaway here? Okay.

And then for the second topic, my main takeaway is that in general across time if these products are stored in a cool, dark, and dry place, these products last for a good amount of time, and there is not really any specific safety risk that can come from it. There might be slight changes in cannabinoid concentration but, other than that, if it is stored properly, then there is a long period of time in which these products are stable, and providing more information about harvest date and potentially storage factors that went into a product might be helpful for increasing consumer knowledge. Is there anything that I am missing there? Okay, great. If anybody has any additional thoughts, please let me know. Otherwise, this has been a really great conversation.

So I know that it is time. Any considerations for next steps? If not, then we will take this information, consolidate it, and we will kind of go from there based on other conversations and these conversations as well. Okay, great. Thank you so much, everyone. I hope you have a good rest of your day. Appreciate it.

David Gang: Thank you, Sarah.

Sarah Okey: Bye.

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