On August 31, 2021, the Washington State Departments of Ecology and Health hosted a webinar to update stakeholders on our progress identifying safer alternatives that are feasible and available to replace flame retardants in electric and electronic equipment. We also discussed our progress identifying whether printing inks with lower concentrations of polychlorinated biphenyls (PCBs) are feasible and available.

Note: This document outlines the questions attendees asked during the webinar as well as the answers the Safer Products for WA team provided. Find the comments and input attendees shared during the webinar in the August 31, 2021 webinar presentation,[1] including the electric and electronic equipment discussion[2] and the printing inks discussion.[3] If you have questions, contact us at SaferProductsWA@ecy.wa.gov.

Electric and electronic equipment questions and answers

Q: On the standards, isn't the UL standard being replaced by an international standard? IEC 62368?

A: We're unsure—we thought the 62368 standard was for audio and video equipment, but we'd need to confirm that. We believe the UL standard tends to be the U.S. standard, whereas the IEC is used for other countries, and they tend to be similar. Most of what we've seen are the UL standards.

Q: Do you anticipate a final rule will more clearly define the scope of electronics that could be covered?

A: This is one of the scope questions we would like stakeholder input about. We currently don't have a clearer definition for electric and electronic enclosures. We appreciate input on how we can make that definition more clear (and what is unclear about it) as we make decisions going forward.

Q: How will a change in GreenScreen® Benchmark score for a substance be addressed in the regulation? A viable design with a safer alternative can be rendered non-viable after a drop in the score of the substance.

A: To score GreenScreen® Benchmark 2, data is required for Group 1 human health endpoints, (cancer, mutagenicity, reproductive and developmental toxicity, persistence, and bioaccumulation). Moving away from GreenScreen® Benchmark 1 chemicals starts weeding out persistent, bioaccumulative, and toxic chemicals. Because data is required on those endpoints, it's less likely a chemical would be reassessed to have a lower GreenScreen® score. We have to decide based on the best science we have right now, so we use current GreenScreen® assessments. The way GreenScreen® is set up, that situation is unlikely. But we would figure out how to address that situation if needed, including potentially modifying the rule. We identify multiple safer alternatives, so we would've identified other chemicals that could be used. Alternatives are safer, feasible, and available, but the restriction would only restrict the priority chemical and would not require the use of a specific alternative.

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1 https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/August_31_2021_Webinar_Presentation.pdf

2 https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/August_31_2021_Webinar_Presentation.pdf#page=48

3 https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/August_31_2021_Webinar_Presentation.pdf#page=85

Q: In the case of complex products, are you just concerned about the whole full product and what is outside of that? How can you help us understand anything that may be inside, by may never be or rarely is dealt with, maybe only touched by a service technician (not necessarily an end-user, but possibly)?

A: How we define inaccessible electronic component may help—it's something that is "located inside and enclosed in the product, and is not going to come out of the product or be accessed in any reasonable foreseeable use or abuse of the product." Any stakeholder input around this definition would be helpful. We're trying to understand the situation you're referring to—like changing a component of a personal computer—we would need to learn about the situation further, but it sounds like you are describing an internal component. A visual of what you're describing would be helpful. We have been reviewing different definitions in standards and other regulations, and if you have examples of wording that helped clarify, or if you could provide an image, then we can make sure we're as clear as possible in our definitions. And if we need to provide supplemental information, then we can prepare that and develop it as guidance.

Q: Are all electronic enclosures for all products, regardless of how a consumer interacts with it, in scope? Or do you intend to make a narrower definition? In some of our pumps, you can uninstall and reinstall communications cards for internet or Bluetooth capability for control purposes. Does that make the entire communications card an electronic enclosure? Or because it's normally operated inside the pump, is it not deemed to be normal use or abuse, and the pump controller therefore is not in scope?

A: Regarding the communications card, it's likely these products would be excluded, but we don't have full clarity on the product you're describing. A visual would be helpful to ensure we have the ability to clarify where we can, and we would appreciate if you shared one.

Q: I would recommend the analysis team also look at yellow card ratings for all of the plastics safety aspects manufacturers have to take into consideration when changing plastics. It's not just flammability rating by any stretch. I think it would help you understand the complexities some of this could cause in manufacturing if we have to switch to a new plastic.

A: We appreciate the input because we're not fully aware of all the factors to consider. We've reviewed a number of yellow cards and seen the many criteria. That's one reason we want to provide multiple safer alternatives, because we understand it's not always a drop-in replacement, and depends on the performance needs for the enclosure. Specificity for applications is a challenge, but if none of the alternatives are feasible and available for your product, we would appreciate that input. Understanding the performance that flame retardants are providing here is important. We do have to narrow our scope when it comes to replacing the priority chemical, to identify alternatives that serve the same function, so we're looking specifically at the flammability rating for that reason. It's helpful if you could provide an example of a specific type of plastic where you're currently using an organohalogen flame retardant and you don't think any of these alternatives would work in that application. That will help us figure out if there are needs that are missing, and if there's anything we need to consider excluding because it's not feasible for that use.

Q: The example raised about an item that might be considered interior to the product, then is, on a rare occasion (I heard 10 years for example, but there probably are many products with different frequencies) changed out. Is there any cutoff point? Getting some clarity in the final rule to understand that would be great.

A: A consumer product means any item, including any component parts and packaging, sold for residential or commercial use. The pumps example would absolutely be consumer products, even if purchased and used inside an industrial plant. We're asking for feedback around how we should clarify that definition of electronic enclosure. We're hearing from you that you want more specificity, and we need help understanding what that looks like in your world. In terms of swapping something out every ten years, writing that into a rule would be really hard to do properly. We're looking for information we can write into a rule, and your knowledge into these things is definitely part of that. The examples you're mentioning are really helpful as we're defining this and clarifying what it means. We don't know exactly what is unclear. Would a suggestion to clarify it's the outside or exterior be useful? If we were to write something referring to the external casing, if you're talking about swappable parts, like the power supply of a desktop computer, that could theoretically have its own case that goes inside the desktop. Keep in mind that if that product is meant to be periodically swapped out, that means it's sold all by itself, meaning in and of itself it is a consumer product. We'd start by asking whether the component is plastic, because sometimes they are not, and that might simplify. Examples of existing definitions, products you find are unclear, examples of wording you recommend we consider, etc. would all be helpful input.

Q: Would these alternatives be safe if they remain in recycled plastics? Is there technology to separate them during recycling (if needed)?

A: The alternatives would be safer based on our analysis, versus the halogenated flame retardants, if they remained in the recycled plastics. In terms of technology to separate, we are not aware of all the different technologies and sorting mechanisms. Studies have addressed how they can be recycled, and there are different voluntary standards or codes added to products to help with identification of the flame retardant groups used. At this point, information we identified didn't show any evidence that these efforts impede recycling.

Q: Reducing required UL-V levels for electronics makes use of alternatives easier. Is Washington state in favor of reducing required UL ratings for enclosures?

A: We can't speak for all of Washington, but we are using the UL ratings to understand part of the feasibility of these products. If you're manufacturing a product, in the design stage, it's helpful to ask questions about how you can optimize. One of the examples in the UL 746—which refers to the 94 UL standards—was having a sub-enclosure that allows you to meet lower flammability standards, including HB, where the addition of flame retardants is not necessary. We would encourage that type of consideration in the design to try to reduce the use of additive chemicals in products.

Q: There's intense regulatory work on the restriction of PFAS substances. Do you expect the same in Washington state in the near future? Because that could compromise PTFE replacing organohalogen flame retardants.

A: There is current work to address PFAS in other product categories. We wanted to identify alternatives that we consider safer. In order to do that, many of the alternatives we identified were organophosphate flame retardants, and they may require an anti-drip agent, for instance PTFE. We do think that the combination of a maximum of 0.5% PTFE by weight and the Benchmark-2 or -3 organophosphate flame retardant is a safer alternative to using organohalogen flame retardants. But we can't predict how this would be impacted by legislation in the future. PTFE does not meet our criteria for safer and it is not a safer chemical. We approach the definition in the law by thinking about safer as less hazardous. We're looking for potential to reduce the concentration of chemicals that do not meet our criteria for safer in electric and electronic enclosures from double digit percentages down to half a percent. That's progress. It's not the end goal. PTFE doesn't work as a flame retardant, so even if we had alternatives to PTFE in electronic enclosures, it wouldn't be in scope in this cycle. It doesn't mean it would be out of scope in the future, it could mean that as more innovation occurs in the field, and as we move toward safer chemicals, we could look at PTFE again. At this point, the innovation isn't there. Taking one step forward is better than none at all, but it's not where we want to end up.

Q: Would housing/enclosures also include things like the cover for thermostat controls or carbon monoxide alarms, household fire alarm gismos, things like that?

A: Yes, the external enclosure of a thermostat controller or carbon monoxide detector would be in scope.

Q: What about parts on the exterior of an electronic product that come into end-user contact but do not "enclose" any electronics, such as a hinge on a laptop?

A: It is not part of the enclosure, so it would not be in scope, especially the hinge. There could be some small components of a different material, and while they are enclosed, they're not the main frame structure. So there might be some additional elements on a device that would not be a component, that would be defined as the enclosure. We don't see the hinge being an enclosure component, more a connector of enclosed portions of the computer.

Q: An adaptor is listed as an example of device casings in the draft priority product report. An adaptor may contain cable and connector. Is the cable sheath part of the adaptor considered a device casing, or only the connector part is?

A: The cable sheath is not considered part of the device casing. For an adaptor, it depends on the connector portion. Some adaptors have the cable with the sheath, and then have a large plastic enclosure containing parts, and then more cable, so the portion that has the plastic enclosure would be in scope. In other cases, the connector portion is not an enclosure, but molded plastic with wires in it—that would not be considered an enclosure.

Q: Could you just elaborate on that, the rationale? So any kind of a cable, I'm hearing that the sheath on the cable for electronics would be out of scope? What is the rationale there? It encloses some wires, but you don't consider that an electric and electronic enclosure?

A: It's a different product and a different plastic in most cases, so this wasn't the intent of the definition of electronic and electric enclosure. In other regulatory definitions, it's considered a different component.

Q: Is Ecology considering the likelihood and/or frequency of consumer contact with a product in developing a scope for a potential regulation?

A: We assessed exposure potential in our report on priority consumer products.[4] The law we're implementing addresses exposure in the potential frame. We're thinking about whether it's possible for people to be exposed to these chemicals from these products. We know that touching is a potential route of exposure, but we also know that flame retardants used in electronics can be released over time and can end up in house dust, where children have the potential to be exposed as well. So we are not directly considering frequency of contact as a way of developing the scope for these products going forward, the exposure potential was considered when we identified the priority product.

Q: How will circular economy initiatives for the use of post-consumer recycled content be treated in the regulation? These plastics may have legacy flame retardants.

A: This is a good point and an important consideration. One thing we are balancing as we think about potential regulations is how to promote recycling and make sure we have a more sustainable circular economy. There are some example regulations with higher limits to allow for some recycled content to be used in the product. We're considering the circular economy and aiming not to hinder recycling efforts, which is a balance. We're reviewing other regulations on products with recycling considerations and thinking about whether it makes sense to incorporate into our potential regulations. Examples stakeholders found helpful are appreciated if you're willing to share them.

Q: Can Washington follow the lead of EPA in the recent restriction of PIP (3:1) where the restriction exempts recycled resins, and simply applies to new resin? This rule was drafted to not inhibit the use of recycled resins.

A: This would be a great example for us to consider, so we will review it. Over time, the recycled content would have lower concentrations of the chemical that's being phased out.

Q: Any comments regarding safer flame retardants for lithium ion battery enclosures, and would any work under cases of thermal runaway?

A: No specific comments, because we're not familiar with enclosures for lithium ion batteries and if they are external enclosures. It would be helpful for us to know whether any of the safer flame retardants or resins we mentioned would potentially be feasible.

[4] https://apps.ecology.wa.gov/publications/documents/2004019.pdf

Q: My understanding based on the presentation is that halogenated flame retardants will be considered hazardous, and hence will not be allowed for use in products. Also, it states that OPFR with PTFE will be considered safer alternative. Does that mean that a halogenated flame retardant, even with a GreenScreen® Benchmark score of 2 or above, will not be allowed?

A: Our analysis assessed organohalogen flame retardants as a class. We did not identify any organohalogen flame retardants that were GreenScreen® Benchmark 2 or above and that were also used in electric and electronic enclosures. Any potential restriction would cover the class of organohalogen flame retardants. If you have an example of a halogenated flame retardant with a Benchmark 2 or higher score that is used in these products, we appreciate that input. Organophosphate flame retardants with a limit of 0.5% PTFE are considered safer alternatives but for some applications, the anti-drip is not needed, so the organophosphate flame retardant alone would be considered safer. In other applications, with the classification HB for example, you don't need to add flame retardants, and that would also be considered safer.

Q: What timeframe are you considering for the transition period for this regulation? In the discussion we had with EPA, regarding PIP, the industry as a whole provided feedback to the EPA, and the request for extension to the rule was for 2 to 10 years.

A: We have to provide a minimum of one year from rule adoption before those rules take effect, so 365 days would be the minimum. So the earliest possible date for any regulations to take effect would be June 1, 2024. But that said, we need input from stakeholders making these products about how long a reformulation actually takes them. So hearing the input you provided to EPA, especially the justification you gave to EPA, would be helpful to us. We have flexibility around the timeline and have not made any decisions about that, so input is welcome. When we adopt restrictions into regulation, there are usually provisions that allow for the sale of products already in the chain of commerce. So even if we restrict the sale or use of the chemical in the product, usually there is a provision for items already on the shelf that can be sold until a certain date.

Q: PTFE is also used with organohalogens as an anti-drip agent to meet V-0?

A: No, our understanding is that the organohalogens serve both functions, the flame retardant and the anti-drip function. When you switch to an organophosphate flame retardant, for the classifications that do not allow dripping, an anti-drip additive would be needed, and PTFE is the most common one normally used.

Q: Perhaps I missed it, but did you assess the relative feasibility/safety of metal enclosures?

A: Only indirectly. At the beginning of the presentation, we did mention that metal enclosures could be an alternative. But since we're focusing on the plastic enclosures, we of course provided more detail about the plastics. For the overarching metal enclosure, we didn't address it in our analysis beyond listing it as an example. For the sub-enclosure, we indirectly addressed safety, because the sub-enclosure changes those flammability classifications and the need for flame retardants and PTFE.

Q: Another question about light bulbs components? Would they be considered part of this? The part at the bottom between the glass and the metal part.

A: Light bulbs themselves, no. The external portion of the product would be in scope, but not the portion that's inaccessible.

Printing inks questions and answers

Q: What studies has Ecology conducted to support the conclusions found on Slide 73?
Q: What studies have been done by Ecology to support the following statements? "People and the environment can be exposed to PCBs from printing inks during use (both in printing and with printed products), and from the environment after disposal of printed products." PCBs are ubiquitous and there needs to be definitive studies to support the conclusion and cannot be based on opinion or supposition.

A: We are not correlating any risk or harm from PCBs in printing inks. If you are handling printing ink, and there are PCBs in the printing ink, by definition you could be exposed to PCBs. Our law defines significant source or use based on a handful of criteria, which address the potential for exposure to sensitive species and populations. So is there potential for people to be exposed to PCBs from printing inks? Determining that is the goal, and you can find all this information in our report on priority consumer products.[5]

Q: Because PCBs are inadvertent contaminants, any ink with lower concentrations of PCBs could be considered a safer alternative to ink with higher concentrations of PCBs. I want to get the Department's thinking on what might be considered an actual alternative—meaning that not all inks are created equal. Many inks are developed in a way that's for specific applications, some examples were given at a high level, but depending on the print quality, the effect, the usage or the intended exposure, indoor versus outdoor, etc. So you're not thinking that just because any ink happens to have a better PCBs level that it would be actually considered a real alternative? If it didn't meet the customer needs, demands, and specifications, and so forth, I don't think it would really be considered an alternative. Could you speak a little to that please?

A: That's definitely true. We have two things we consider when looking at alternatives. We assess purely the safety, which this addresses, and then we look at the feasibility and availability of the inks in a separate process. Only assessing safety, fewer PCBs is safer than more PCBs, but in terms of feasibility and availability, input is welcome. In order to meet the requirements for the restriction, we need something that's safer, feasible, and available.

Q: Are paints still in scope in addition to inks?
Q: Will paints be a part of this assessment, and aligned with the timetable?

A: Yes, we are still assessing paints. We focused on printing inks during this presentation because we were waiting for preliminary product testing results to share today, but we are still assessing inadvertent PCBs in paints as well.

Q: Just wanted to confirm—digital ink jet and other "non-impact" printing (including office printers that use powder) is excluded and not in scope?

A: No, all ink is currently in scope, including non-impact printing and digital inks. Toner is not in scope because toner is not an ink, it's a powder.

[5] https://apps.ecology.wa.gov/publications/documents/2004019.pdf

Q: Especially since these are incidental PCBs, does Ecology consider potential variability of the levels for each product? Basically how much of these data are really just luck of the draw? Do you have a way around that?

A: That's certainly something we've considered. We would need more data to get a better handle on this. If you have information on how much variability there is, we would love to hear that. We're doing the best we can with the data we have. The more data the better—so that's why we're testing so many products. Multiple products showing a low level gives us confidence that even considering variability, in general, we can reach these lower levels.

Q: To get that data are you working with the actual pigment manufacturers?

A: We are trying to. We would love more information from any manufacturers, but we have not received much.

Q: The assessment of trace concentrations of PCBs in ink uses the word "significant" to describe that they are a source and reducing the concentration of PCBs would result in significant reductions. Since Ecology just tested an extremely limited set of inks, how was this conclusion drawn prior to the testing?

A: "Significant sources or uses" are based on the criteria specified in the law we implement. It includes:

- The estimated volume of the priority chemical added to or present in the product.
- The estimated volume of the product sold or present in the state.
- The potential for exposure to priority chemicals for sensitive populations or species when the product is used or disposed of.
- The potential for priority chemicals to be found in the outdoor environment.

So that's the criteria we consider when looking for significant sources or uses. For inks, our data was primarily based on printed materials and printed products. To identify safer alternatives, we needed to investigate more about PCB concentrations in inks. When we defined inks as a priority product, we had enough information to conclude that they are a significant source or use of PCBs. Based on that prior determination that inks are a priority product, the restriction would therefore reduce a significant source or use of PCBs.

Q: Is there a sampling or statistical requirement in the law for what constitutes enough samples to assure that safer alternatives are available?

A: This question is one of the reasons why we haven't made a conclusion based on the preliminary printing ink data that we have. We're sharing it with you and asking for input on it. Typically, when we look for safer alternatives, we're looking for an alternative with a specific function, and we can identify manufacturers who are using it, it's in products that are sold, and that it's working. It's a lot more straight forward when it's an intentionally used ingredient and we can see that the ingredient switch has been made. With an inadvertent contaminant or byproduct, we do have to consider the variability, and that's one of the reasons why we're more hesitant to draw conclusions today. We're still figuring out what exactly these data mean and what conclusions we can pull from 20 samples. There isn't a specific requirement for sampling in the law, because most of the time we're not looking at inadvertent contaminants. It's something we want to sort out with our stakeholders today. What kind of data would support an assessment of feasible and available—with the variability in the data and in this context?

Q: If there are PCB's in commercial printed materials (mailings, packaging, etc.) what is the danger to end-users, and what is the recommended way to handle these materials if there is a danger when handling (such as, gloves)? How does this impact the environment from the standpoint of recycling and post-consumer reuse? Are these materials going into the landfills?

A: By listing a product as a priority for assessment, we don't intend to say that any of these individual products are unsafe. We're focused on considering cumulative exposures, with the understanding that there are many individual sources coming from different consumer products. The cumulative impact of those on our environment and on our health is what we're concerned about. We don't want to say there is danger when handling individual printed material—we're saying it's a potential route of exposure. We should reduce the exposure to priority chemicals when safer alternatives are feasible and available. We're looking for where we can find opportunities to reduce exposure, but we didn't identify these priority products based on risk, and we're not making regulatory determinations based on risk, but rather on whether there are safer alternatives available. Regarding the second portion of the question, yes, printed materials are everywhere—some are being recycled, some are going to the landfill. There has been a lot of testing done on outflow from wastewater treatment plants, and there are PCB levels in those outputs. PCBs are ubiquitous in the environment, and we listed printing inks because we do think there is potential for the PCBs from these products to enter the environment.

Q: I can share position papers from Ecological and Toxicological Association of Dyes and British Coating Federation on PCBs. How do I send them to you?

A: Please email the reports to SaferProductsWA@ecy.wa.gov and thank you for sharing the information.

Q: Can you please share the studies that you mentioned about PCBs and inks and exposure?

A: They are in our report on priority consumer products[6] and we are also happy to email you the references.

[6] https://apps.ecology.wa.gov/publications/documents/2004019.pdf

Q: Ecology has routinely misrepresented the HP standard, as indicated by the last commenter.

A: We did verify this information in the standard,[7] and heard back from Apple. Part of the discussion we've had with regard to the potential restriction relates to the scope and whether it only applies to electric components. We need more information, but the language in the email we received states that "indeed the PCB restriction applies to all homogeneous materials in Apple products, accessories or packaging, which may include any cured inks, and is not just limited to electronic components." We do not believe we misrepresented this policy in our discussion, since it appears it applies to a broad category of products.

Q: Of the printed samples tested, which printing process was utilized for the printed material?

A: This is something we are not clear on, because we did not investigate it. However, all sorts of printed materials have been tested, so we can assume there are samples from all of the major printing processes. We found a wide range of PCB concentrations in many types of printed material as well.

Q: Could you share information about the printed substrate testing? I saw the information on ink testing, but I didn't see anything on printed substrates, and I'd be interested in seeing that as well.

A: Sure, we would be happy to share the printed substrate data. It's also available in our report on priority consumer products[8]—some testing came from Ecology, from the Spokane area, and from some peer-reviewed journal articles.

Q: I got the sense as you were talking, that there was some type of similarity between availability and feasibility. Consumer product companies spend tens of millions of dollars on color specification. I believe that needs some type of consideration when you're thinking about restricting various components of printing ink—about the feasibility of being able to provide those inks to the color specifications that are necessary to meet consumer needs.

A: Thank you for this input. According to the Interstate Chemicals Clearinghouse guide and how we are approaching feasibility,[9] if the product is sold and advertised for that purpose, then according to the guide, it is considered feasible for that application. This is one way we can consider feasibility, so it's why we expressed that if a product is sold, we can consider it feasible. In our method, if we were to buy an ink for printing with the desired application, we could say it's feasible and available for that application.

Q: The other point I'd like to make is the distinction between inks sold into the consumer market like inkjet and inks sold into commercial printing entities. There is a big difference between how those inks are handled in the commercial environment versus conceivably how they are in the home environment.

A: Thank you for the input. One thing that's helpful to clarify is the definition for consumer products in the law we're implementing—it can include residential, commercial, and industrial products.

[7] https://h20195.www2.hp.com/v2/getpdf.aspx/c04932490.pdf
[8] https://apps.ecology.wa.gov/publications/summarypages/2004019.html
[9] https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/SaferProductsWA_WorkingDraftCriteria_FeasibleAvailable.pdf

Q: Are liquid toners out of scope? These toners use pigments in polymer beads, dispersed in an oil that evaporates during the fusing process and are used in digital presses typically for commercial printing on a wide range of coated papers.

A: This is something we haven't looked into because we weren't aware of these products. We would be interested in stakeholder input about whether this qualifies as an ink.

Q: Clarify scope—commercial vs. home.

A: Our current definition of the printing inks category would include both residential inks you purchase at the store and use at home, and commercial inks. The product categories are written broadly in Phase 2 in order to get stakeholder input and determine whether the category needs to be narrowed further going forward. We have not narrowed to specifically commercial or home inks, and we would be interested in hearing from stakeholders about differences in performance requirements between the types of inks, because we have not identified any.

Q: What was the EPA Method used for the analysis of PCBs on Slide 78?

A: EPA Method 1668.

Q: Going back to the issue about the feasibility of ink that can be purchased—I would hope you wouldn't say well, I can buy an inkjet cartridge for a printer that's low in PCBs and then equate that to mean it's available for a flexographic or a lithographic printing process. There are dramatic differences there, and I want to make sure that isn't a conclusion that's going to be reached.

A: That was the question we have for stakeholders. We see no reason from our research and testing why PCB concentrations would be different between inkjet and flexo inks, so we would appreciate input about that.

Q: If you have different outcomes, print qualities, specification needs, customer demands, I thought we concluded they would be different applications so you wouldn't be able to draw a conclusion (like the example of flexo versus inkjet inks). I thought you said you wouldn't count that as a viable alternative, or did I misunderstand?

A: We are considering separate applications, and thinking about them differently. But we are also drawing the conclusion that because we see these levels in these types of inks, and we have not identified a reason why they would be different in different applications, we're transferring those conclusions to different inks. It's a result of the lack of data. But on the other hand, if we had information to the contrary, for why they would be different, then we wouldn't have enough information to make a determination for those applications. Types of reasons why (or an application where) a lower concentration of PCBs is not possible is the type of input we're looking for.

Q: Primarily it's driven by the pigment manufacturers—that's the source of the PCB contamination. Maybe we spent a lot of time talking about inks but really the isolated concern is the pigments.

A: That sort of input is welcome. We agree it's probably the pigments. We've assessed different recipes for different types of formulations that use the same pigment in the same sort of concentrations for different applications. That's why we made this tentative conclusion that we could transfer these PCB concentrations between different types of products. If you have information to the contrary, it's helpful for us to understand that.

Q: Pigments are available in different grades, even if they seem like the same basic chemistry. So you can't over-interpret conclusions from one test broadly to the category.

A: More clarification would be helpful on that. If you have two different inks and they both have the same chemical pigment, our understanding of what you're saying is that you may have a different grade that makes one of the inks more expensive. But it seems that besides expense, if one pigment has a higher grade and lower PCB concentrations, it may be feasible to switch to the higher grade and have lower PCB concentrations.

Q: Is there an effort to inform printers of the various levels of PCBs in their inks? It might give the printers more information to make different choices to keep their employees safer.

A: Not at this point, we haven't directly contacted printers. However, if you think that's a group we should be engaging, and that you recommend we contact with this information, we appreciate that input. We can certainly use our resources for education and outreach materials to help businesses and organizations understand the potential regulations and what's in their products, so feedback around that is welcome.

Q: Does Ecology have any initial ideas on how a regulatory specification might be drafted for iPCBs in inks?

A: We're going to take everything we learned today and reflect on it, do additional research, potentially have some follow-up conversations with stakeholders, and then when we release our draft report on regulatory determinations, it will have any initial ideas that we have incorporated. You could review the initial ideas we put in the paints presentation[10] for some ideas of what this could look like, but we haven't had enough information to date to make a determination before this webinar.

All product categories questions and answers

Q: What other priority [products] have inadvertent [priority chemicals]?

A: Only the product categories containing PCBs. We discussed printing inks today, and another product we're assessing with inadvertent PCBs are paints.

[10] https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/June_2021_Webinar_Presentation.pdf