The following are questions and answers related to Phase 3 of the Washington Department of Ecology's Safer Products for Washington program.

On August 25, 2020, the Washington State Departments of Ecology and Health hosted a webinar to outline our requirements in Phase 3 and to share our approach for implementing them. Questions asked during that presentation are included below, with answers including both information staff provided during the webinar and additional clarification.

On October 8, 2020, Ecology and Health hosted a webinar to outline our draft criteria for identifying safer alternatives that are available and feasible and seek feedback from stakeholders. Questions and answers from that presentation are included below. Also included are questions from stakeholders outside of webinar events.

Please note that answers included here are not binding commitments, and the information provided could change. If you have questions we did not address here, contact us at SaferProductsWA@ecy.wa.gov.

Comuníquese con nosotros a hwtrpubs@ecy.wa.gov si usted necesita ayuda para traducción.

General questions

Q: Will we receive this presentation so that we can share with others?
A: Find the August 2020 presentation slides[1] and the October 2020 presentation slides[2] on our stakeholder website.[3]

Q: Please provide the email for submitting comments and feedback.
A: Reach out to us at SaferProductsWA@ecy.wa.gov.

Q: When will the notice/registration for the next meeting be sent?
A: We will aim to notify stakeholders at least two weeks prior to the event date. We will continue to offer both a morning and an evening option to accommodate different schedules.

Q: What do we do exactly if we want to know how our comments have been addressed or considered?
A: Please reach out to us at SaferProductsWA@ecy.wa.gov. We are happy to discuss how we considered your comments between the draft and final report on priority consumer products.

[1] https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/August_2020_Webinar_Presentation.pdf
[2] https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/October_2020_Webinar_Presentation.pdf
[3] https://www.ezview.wa.gov/site/alias__1962/37555/safer_products_for_washington.aspx

Q: Under its pollution prevention efforts, how is Ecology working with the POTW and business communities in removing existing PFAS in wastewater?

A: That work is outside the scope of this project and is more applicable to Ecology's PFAS Chemical Action Plan. Find information related to that on the PFAS CAP website.[4]

Q: Where can I view comments submitted on the priority products report?

A: Stakeholders and the public can find comments submitted on the priority products report on our public comment page.[5]

Q: Has Ecology considered addressing PFAS in compostable foodware as well? If so, could you elaborate as to why this was not selected as a priority product?

A: The Hazardous Waste and Toxics Reduction Program addresses PFAS in food packaging through a separate alternatives assessment project under a different regulation. Find more information on the PFAS in Food Packaging AA website.[6]

Q: Ecology just released a new draft PFAS CAP yesterday that mentions the safer products program in its recommendations. That's obviously broader than this program, but is your work on safer and feasible informing/cross pollinating with the CAP?

A: Yes, you are correct that Chemical Action Plans (CAPs) take a broader focus and address many separate programs and projects. We will certainly cross pollinate, and continue to update the CAP as these programs go into effect. The CAP is an overview, and multiple Ecology programs help us implement the recommendations.

Additional clarification: The Draft PFAS Chemical Action[7] did not have information on safer and feasible specifically, due to the timing of the work. That information will be included in the Final CAP.

Phase 3 process questions

Q: What is the criteria for determining when a product results in significant exposure to people and the environment? Where is this spelled out in the regulations?

A: The law identifies the criteria for significant sources or uses of priority chemicals. It includes things like the volume of the product, the volume of the priority chemical in the product, exposure potential, and existing regulations. The full criteria are available in Chapter 70A.350.030 RCW.[8]

[4] https://www.ezview.wa.gov/?alias=1962&pageid=37105
[5] http://hwtr.ecology.commentinput.com/comment/extra?id=4CT3u
[6] https://www.ezview.wa.gov/site/alias__1962/37610/pfas_in_food_packaging_alternatives_assessment.aspx
[7] https://fortress.wa.gov/ecy/publications/summarypages/2004035.html
[8] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.350.030

Q: The implication from the reading of page 10 was that all five chemical classes exhibit ALL of those potential effects. Clarification on that would be helpful.

A: Thank you for that feedback. We address, at a high level, the potential human health effects of each chemical class in the first chapter related to each chemical in the priority products report.[9]

Additional clarification: Some chemicals within each of the classes are associated with one or more of the named effects. Not all chemicals within the classes are associated with all effects.

Q: Will Ecology also be clearly defining or establishing a criteria for determining whether a safer alternative is feasible and available?

A: Yes. We will discuss that at the next webinar related to the technical criteria for Phase 3.

Q: Can you say more about what public input and stakeholder engagement will look like when developing product subcategories?

A: We hope to have those conversations during webinars that are specific to individual product categories.

Additional clarification: We plan to work with our stakeholders to determine whether subcategories are needed for certain products, and if so, how they should be defined.

Q: What are the potential regulatory actions and would there be grace time period?

A: Based on the available data, we could determine either no action is required, or that a restriction or reporting requirement for manufacturers is necessary. Any grace period would need to be specified in rule, but the law does specify that a restriction can be in place no sooner than 365 days after rule adoption.

Additional clarification: In Phase 3, Ecology is required to determine needed regulatory actions, which includes determining whether no actions are needed. We are required to submit a report on the determinations to the Legislature by June 1, 2022. This gives the Legislature an opportunity to modify our determinations. As submitted to the Legislature, the determinations are not regulations. The law requires Ecology to adopt rules before any determination becomes a regulation. The deadline in the law for adopting a rule for the first cycle of Safer Products for WA is June 1, 2023.

Q: When the risk equation was presented, the hazard word became redlined yet I think I heard that hazard will be the focus of determining safer alternatives (and not exposure). Did I hear right? If I did, then only drop-in chemical replacements would be valid.

A: We are looking at safer alternatives using the guiding principles of the Interstate Chemicals Clearinghouse guide to alternatives assessments. The first golden rule of alternatives assessments is reducing hazard. We consider exposure in terms of exposure potential—based on attributes of the chemical, product, and potential alternative. We will consider different chemical properties associated with environmental fate and transport, like persistence and bioaccumulation. These principles work for both drop-in substitutes and alternative materials and processes.

[9] https://fortress.wa.gov/ecy/publications/summarypages/2004019.html

Q: You displayed a slide suggesting a goal of eliminating hazard, but nothing has "zero" hazard. So, in considering safer "alternatives" it is a fallacy to ignore relative hazard and exposure. In other words, identifying "safer" requires a risk assessment.

A: We recognize that we are not going to be able to eliminate all hazards. But when we have safer alternatives, it's preferable to avoid the use of hazardous chemicals when they are not necessary.

Additional clarification: Our approach under the Safer Products for Washington program aligns with the objective of an alternatives assessment. By reducing the use of hazardous chemicals, we reduce the risk to people and the environment.

Q: How will disproportionate exposures to communities of color and other overburdened communities be considered in making regulatory decisions?

A: Environmental justice is something we are including throughout this process. We use various tools to determine which communities in Washington are overburdened with exposure to toxic chemicals. Tools like the EPA's Environmental Justice screen and the Washington Tracking Network help us identify communities that rank high (9 and 10) for environmental health disparities. We use that information to prioritize our outreach related to reducing exposure. We also considered disproportionate exposures to toxic chemicals when we developed our list of priority products.

Additional clarification: We included products with lower barriers to replacement. That way, if we enact restrictions, everyone will benefit from safer products, not just those who can afford to buy new products. This will also apply as we look for safer alternatives. We want to identify alternatives that are accessible for everyone.

Q: Are you going to be soliciting input from our communities of color and other vulnerable populations in your decision-making and intervention? The work would be strengthened by using a pro-equity approach.

A: We agree about the importance of a pro-equity approach. We're trying to engage with communities where we can throughout this process. Community engagement looks different right now, because we cannot host public meetings due to COVID-19 guidelines. A lot of engagement will have to shift online. We hosted a community outreach event in February and solicited feedback from community organizations. Between the draft and final report on priority consumer products, community feedback led to some important changes. But we have a lot to learn and welcome feedback on how to best reach community—and the best mediums for doing so without being able to hold public events.

Q: Is there a requirement in the law that requires Ecology to publically address comments submitted on the documents issued under the law?

A: A formal response to comments was not required for the priority products report under the law, though we did track how we addressed comments. We will publish a formal response to comments as part of any rulemaking in subsequent stages.

Additional clarification: A response to comments will be developed for any draft rule implementing RCW 70A.350. This is required under the Washington Administrative Procedures Act. Ecology will hold a public comment period for the report to the Legislature on regulatory determinations. This is required under RCW 70A.350.050.[10]

[10] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.350.050

Q: When during Phase 3 will specific CASRNs for the priority chemical classes be provided? Appendix 1 in the final report has numerous classes (such as PFAS and AP/APE) that do not have specific CASRNs identified.

A: We used the Chemical Abstract Service Registration Numbers provided in Appendix 1 of the priority products report to clarify the acronyms and to identify the chemicals referenced in the report. These examples do not necessarily define the class and they certainly don't define the scope of any future regulations. During Phase 3, we will work to clarify the chemicals within the classes, and that will happen in product-specific webinars in 2021.

Q: NIOSH data shows that coal tar (a group of polycyclic aromatic hydrocarbons used to coat iron pipes) is far more toxic than some of the chemicals chosen. What criteria will Ecology use to pick priority hazardous substances, and is NIOSH data considered?

A: The Legislature identified the first set of five priority chemical classes in the law. In the next Safer Products for Washington cycle, we will be identifying the chemical classes. The criteria we would use to identify the next set of chemicals is written in the law. It focuses on the impacts to sensitive populations, including workers, so we could consider National Institute for Occupational Safety and Health (NIOSH) data in the future. But we are not yet starting the work to select the next set of priority chemicals.

Q: Why are existing regulatory risk assessments not used as a guide to identify consumer articles, containing some of these chemical classes, that have been found to be of low risk?

A: The law directs us to consider cumulative impacts and cumulative exposures. We are exposed to these priority chemicals from multiple consumer products, and those exposures add up and can lead to adverse impacts.

Additional clarification: With the chemical classes chosen by the Legislature, Ecology followed the language in the law (RCW 70A.350.030(1)[11]) to identify priority products: "…identify priority consumer products that are a significant source or use of priority chemicals." The priority products we identified in the report to the Legislature are a small subset of the many consumer products containing priority chemicals. The program aims to understand the sources of priority chemicals and identify opportunities for reducing cumulative exposure for people and the environment. Evaluating the priority products (Phase 2) and the need for regulatory actions (Phase 3, with possible Phase 4 rulemaking) could reduce the use of the priority chemicals in priority products. That reduction could result in important decreases in cumulative exposures.

[11] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.350.030

Q: Looking forward to chemical restrictions, if needed, will there be deminimus values possibly based on NOAEL's and if so, will the deminimus value limits take into account background noise or naturally occurring levels of a chemical in the environment?

A: Instead of focusing on setting safe exposure limits, we are trying to identify exposure sources that have safer alternatives. We want to reduce the use of hazardous chemicals when safer alternatives are available. We might look at no-observed-adverse-effect-levels (NOAEL) or lowest-observed-adverse-effect-levels (LOAEL) in identifying safer alternatives. But we are not setting safe exposure levels.

Additional clarification: If we determine that restrictions are necessary, we will work with stakeholders to find feasible ways to reduce priority chemicals. That may include restrictions on priority chemicals in products above a specific concentration.

Q: If there are no feasible alternatives for raw materials that contain unintended chemicals, what will be the action?

A: In order to implement a restriction, a safer alternative has to be available and feasible. When we start to discuss that criteria, we want to make sure the alternatives work for industry and manufacturers. In general, if it is not feasible, it would not qualify for a restriction.

Q: Why is safer defined as "or the environment" when the goal is to reduce the costs of environmental cleanup?

A: The law allows us to look at exposure to priority chemicals for not only people in our homes, but also for wildlife and the environment. In that way, we can look upstream to eliminate sources of exposure affecting both people and the environment.

Criteria for identifying safer alternatives

Q: In your presentation (slide 13), the slide indicates that the restriction must reduce a significant source or use of a priority chemical. Is there a definition for "significant source"?

A: Our legislative report identified products that are significant sources or uses of priority chemicals. That was based on criteria in the law, which includes the volume of the chemical in the product, the volume of the product sold in Washington, the potential for people and the environment to be exposed, and other criteria. Find the criteria in 70A.350.030.

Q: Since Ecology seems to be well aligned with Globally Harmonized System of Classification evaluation and other methods as a means of evaluating safer, would you consider products certified to the ANSI/ASTM E3182 as having met the intent of the Safer Choice requirement?

A: That is really helpful feedback, because haven't evaluated that standard or the criteria behind it. Additional standards are helpful to us, so thank you for that. We will look into it.

Q: Is it possible to get a copy of the analysis for PCB-11?

A: The chemicals listed on that slide have GreenScreen® assessments either Benchmark 1 or List Translator 1. They are publicly available on the GreenScreen® website, and ToxServices also maintains a database. We can help you find it, just reach out to us.

Q: There is a difference between classifying a chemical under a "hazard" based versus a risk based classification. If a product has a priority chemical in the parts per billion range, should it not be classified differently than that same chemical in the parts per million range?

A: The law tells to focus first on identifying priority chemicals, then on identifying priority products. Now, we're focused on reducing the use of priority chemicals in priority products. What is significant between product-chemical combinations won't be a single threshold, even though we have set criteria. In terms of risk assessment vs. alternatives assessment, the law tells us safer means less hazardous, not less risky, and we are implementing the law as written. Risk assessments have many applications in chemical safety, including setting acceptable exposure levels when we can't avoid using hazardous chemicals. But risk assessments for consumer products are problematic. The priority chemicals identified in this law are frequently detected our bodies. So a risk assessment showing that the exposure from one source or product is associated with a low risk of harm does not fully capture our exposure. Although exposures to priority chemicals from individual products may be small, they add up, and the risk of health problems increases. So instead of asking what is the risk to people and the environment from each product, we're asking where are the opportunities to reduce exposure to priority chemicals by using safer alternatives?

Q: How are data rich substances evaluated versus new substances that rely on surrogate, in silico, etc.?

A: We will always use the best available data, and in a lot of cases for products that have been on the market longer, we have more data. We don't have to evaluate all alternatives, only specific to the application in the product. But we recognize that there's a difference between low and high confidence in data, and the GreenScreen® method has some guidance on confidence levels that might help us going forward.

Q: Can you describe how you would determine if an endocrine disrupting chemical would have an adverse health effect? What data are used since none are required?

A: For endocrine activity, you could have evidence from an in vitro assay or something showing activity in the endocrine system, but that's different than a study finding it caused changes in the endocrine system if those changes are also associated with liver weights or another pathological finding. There is a distinction between having the activity and knowing the activity could cause a problem, and that's an important distinction for certifications we've looked at. It's described in GreenScreen®, and we will eventually go into this in detail.

Q: What if a low solubility chemical is highly toxic to aquatic organisms? This phenomenon is well documented, e.g., pyrethroid insecticides?

A: We do not have a great answer for this question today, but we will look into it and consider it going forward. Thank you for the feedback.

Q: Does persistence include pseudopersistence that occurs from publicly-owned treatment works discharges?

A: We're relying on the definitions for persistence that are set in the existing frameworks. Those don't currently include pseudopersistence. We are concerned about it, which is partly why we work on source reduction. But it's a different phenomenon chemically.

Q: When a chemical is inadvertently present in a product and its presence cannot be controlled, how is an alternative to be identified and assessed?

A: We might look for processes that don't generate that chemical inadvertently. If there is a product available without the inadvertently generated chemical, we may look at it as a safer alternative.

Q: It sounds like your criteria for "safer" are already set. Or is there a chance to provide comments?

A: This criteria is absolutely in draft form, and this webinar is not the only opportunity to provide input. We want to involve our stakeholders early in the process of setting the criteria. Reach out to us if you have more feedback to share, we welcome it.

Q: The EPA Safer Chemical Ingredient List includes some chemicals ("yellow triangle") that have hazard profile issues. Do these chemicals meet the WA criteria for safer?

A: No. We would only consider green circles and green half circles, so the yellow triangle would not meet our criteria for safer.

Q: Will compliance to the rule require third-party certification for some products?

A: No, absolutely not. Compliance will not require certifications. We're basing the criteria on certifications because this existing work is a good place to start. But we are not saying safer alternatives must have certifications. Products and chemicals that meet our criteria could be identified as safer alternatives if we have all the information we need.

Q: For each of the five chemical classes that were identified, will you be sharing what you have determined as a safer alternatives? Specifically I'm interested in PCB's and pigments.

A: Yes, our plan is to get your feedback today on safer, then finalize how we identify safer, feasible, and available going forward. Over the spring and summer, we plan to host product-specific webinars, where we'll address what we found and offer opportunities for input. That's all in addition to a formal public comment period on our regulatory actions report.

Q: I noticed that GreenScreen® product certification of Silver was being recognized as meeting the safer criteria. If I am not mistaken, only 95% of materials by weight need to be assessed at the Silver level. How would that still meet the criteria? (Also, I believe the Silver level product certification is based on list translator and thus would not conclusively exclude Benchmark-1s (only List Translator-1s), correct?)

A: We will look into it. It probably depends on the certification level, and there are likely differences between products.

Q: Can you provide more detail on iPCBs and if there has been more information on the threshold limit in consumer products in particular paints and coatings than may contain impurity limits due to the chlorinated solvent?

A: We have not started to evaluate specific product-chemical combinations yet. At this stage, we're focused on the methodology overall and getting your input on that.

Q: If a lack of endocrine disrupting activity is a requirement for safe chemicals within a priority chemical class, why is endocrine disruption data not required for "safer" alternatives? Also, it seems inconsistent, safer alternatives are permitted to show endocrine disrupting activity, as long as they are not associated with adverse effects. Why is this not an option for safer chemicals within the priority chemical classes?

A: We are approaching within class alternatives with added caution because we know chemicals within these classes are associated with health hazards. We need to hold those chemicals to higher standards because of their associated hazards, and in order to follow the requirements in the law, which asks us to move away from priority chemical classes.

Q: The answer to the question about the use of in vitro and in silico data did not illuminate Ecology's intentions. Please elaborate how Ecology will utilize data from in vitro and in silico data in a future iteration. Advancing the use of non-animal testing is not coming through.

A: There are numerous frameworks for evaluating this data and what it means. We have opportunities we can use. For example, in silico modeling is available for some hazard endpoints, so there are opportunities for us to bring in that data when we don't have experimental data. We will clarify this approach going forward.

Q: Who determined using EPA's Safer Choice, GreenScreen®, and Cradle to Cradle™ which are all voluntary programs are creditable? Has the criteria they use to assess chemicals been publicly vetted and peer reviewed?

A: All of these methods were developed using stakeholder processes, and used public involvement in setting the criteria, including responding to public comments. Also, each criteria is fully transparent, allowing us to have more conversations concerning elements of what does and does not work in specific product applications. The existing certifications are a good place to start for developing our own criteria.

Q: How does the process used to evaluate the toxicity of the priority chemicals compare to what EPA uses for TSCA risk assessments?

A: At some level, they're very different. But we don't know entirely at the state level exactly how EPA would evaluate some of the factors we are looking at in comparison to our criteria.

Q: Are you sure your definition of "hazard" matches that of the legislators who wrote the law? Toxicologists use "hazard" narrowly for intrinsic properties, while lay folk use "hazard" and "risk" interchangeably.

A: The easiest way to know what legislators thought is to look at the statute language in the portion of the law addressing priority chemicals. The language in the statute is really specific. It doesn't talk about hazard as a layperson might—it uses terminology like hazard traits, which is a specific term that tells us we're talking about the scientific meaning, not the general layperson view of hazard.

Q: If you've identified a specific chemical class because of a concern (e.g., endocrine disruption), wouldn't it make sense to ensure that any chemical substitute must show that they do not have the same health concerns? That's why it's not clear to me why alternatives don't have to show lack of evidence of endocrine activity.

A: This question gets at the challenging components of defining safer. It's a tradeoff. We want to look at all these hazard endpoints, but you end up asking yourself which hazard endpoints are worse than others, which is a challenging area to sift through. That's why we're relying on existing methods that have thought through these determinations.

Q: U.S. EPA Safer Choice is public and transparent. GreenScreen is by a nonprofit that is out to make money and not publicly funded (Cradle to Cradle is probably the same). Should a government agency be linking to such money-making efforts?

A: We are linking our criteria to their criteria, based on work they've done, but we are not requiring the certifications, not even the certification from EPA. The Interstate Chemicals Clearinghouse (IC2) Guide, which directs the alternatives assessment process, recommends using the GreenScreen® methodology. The IC2 guide is included in the PFAS AA law (RCW 70A.222.070[12]), and California's Department of Toxic Substances Control and other government entities use these methods as well.

Q: Agreed that we cannot have it all, but one thing we should strive to have is consistency and applying the same criteria across the board. Thanks.

A: Thank you for the comment. It will be considered as we continue to refine our criteria.

Q: What about probable carcinogens?

A: Probable carcinogens would fall into our definition of "suspected carcinogens" and would not meet our criteria for safer. In general, we're aligning our criteria with GreenScreen® Benchmark 2 chemicals.

[12] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.222.070

Q: What about chemicals used in the manufacturing of the product. Not "intentionally added" but end up in product because they are intentionally used in the manufacturing process?

A: We are relying on existing methodologies. They evaluate intentionally added chemicals, impurities, known breakdown products, and residual monomers. It's not as fully considering the product lifecycle as chemicals used in the manufacturing process, but it's broader than only those intentionally added to the product. We welcome further discussion on this.

Q: You're using two NGO certification services. However, who has vetted these companies? At least with the EPA list, you can vet who the scientists are, many of which participate in scientific meetings and publish papers.

A: We are using the criteria that is fully transparent and available from Cradle to Cradle™, Safer Chemical Ingredients List, and GreenScreen®. All of these criteria are available and can be assessed in detail, and then we use them to set our own criteria. We are not requiring that safer alternatives have certifications or labels, and we can do our own evaluations. We do align with these certification programs to leverage work that's already done. What is important about these methods is that they were developed through stakeholder processes, and are referenced in a number of alternatives assessment guides. The Interstate Chemicals Clearinghouse directs the use of GreenScreen®, and we have a history of using it for alternatives assessments.

Q: If you ignore water solubility for aquatic residues, you run the risk of missing hazards to benthic organisms. Here is an example: Pyrethroid insecticides have water solubility at low parts per billion. Residues are not in the water column but reside in the sediment. Bioassays show mortality to amphipods (i.e., pyrethroid residues in sediment).

A: This was also shared in our earlier webinar this afternoon and it's helpful feedback. Thank you for bringing this up and we will look into it further.

Q: Have you thought that the problem with widespread use of flame retardants that have resulted in widespread residues of PBDEs is not one of substituting something safer but the question of whether the use of these things even has benefits. Perhaps in industry there may be a need given hazardous conditions of flammability. But is there really an evidence that consumer products laden with flame retardants have any real benefit?

A: This is another element of this law that's somewhat beyond the scope of this presentation but not outside the scope of how we think about our implementation process. In addition to things we're required to consider for regulatory determinations, we also can look at things like whether the use of the priority chemical is necessary at all. It goes back to the definition of alternatives in the law, which is very broad, and could allow for changes in design.

Q: On slide 36 you raise the issue of exposure potential. Of course, you need that for risk assessment. But it looks like your legislative mandate does not include formal risk analysis but only relies on a hazard standard. True?

A: Yes, the law defines safer as less hazardous. We are thinking about exposure in a way that helps us understand the context around the hazard. Exposure from a chemical that releases directly to the environment is more important than chemicals without direct release. But this law is really not about risk. Risk assessments have a lot of applications in chemical safety. They can be useful for setting acceptable exposure levels in cases where we cannot avoid the use of hazardous chemicals. But risk assessments for consumer products are problematic. The priority chemicals identified in this law are in many consumer products and are frequently detected our bodies. So a risk assessment showing that the exposure from one source or product is associated with a low risk of harm does not capture the whole picture of our exposure. Although exposures to priority chemicals from individual products may be small, they add up. As they add up, the risk of health problems increases. So instead of asking what is the risk to people and the environment from each product, we're asking where are the opportunities to reduce exposure to priority chemicals by using safer alternatives?

Q: Whose determination of probable carcinogen are you using? IARC has quite a different perspective than EPA, EFSA, Australians, Canada, etc.

A: We base our determinations for carcinogenicity on the Globally Harmonized System of Classification criteria or the list of authoritative sources identified in the GreenScreen® methodology. There has been a great deal of work aligning the definitions with the GreenScreen® scoring system. If any of the authoritative sources identify a chemical as a known or suspected carcinogen, it is identified as such.

Q: Has there been consideration of a more holistic approach to "safer" that considers multi-attributes. For example looking at all of the Cradle to Cradle™ areas, not just material health. Most of the criteria are strictly chemical hazard focused and may not consider other sustainability factors like energy use, recyclability, durability, overall volume of chemical use, other environmental factors?

A: This gets at the space between the minimum criteria for improvement and an optimal chemical process or an optimal alternative. We think of our criteria as a process that moves us toward safer chemicals. It's not to say we don't want to focus on all these important sustainability-related factors, but we do aim for incremental improvement, and the law directs us to focus on things that are less hazardous. Those factors are great but, in general, outside the scope of the law we're following.

Q: I saw a lot of adverbs use to describe hazard, i.e., highly hazardous, very high, low hazard, etc. These are not scientific terms so how do you delineate these qualifiers?

A: One of the most important parts of this process is how we define high, moderate, and low. Many levels are based on the Globally Harmonized System of Classification (GHS), which takes everything from point of departure models to LD50s and breaks them into these scores. The GHS built the structure of this, then EPA's Design for the Environment program improved on it by categorizing more information from authoritative sources and other studies on doses and effects. It's summarized nicely in the GreenScreen® method in terms of how they are grouped, so we will refer to that.

Defining feasible and available

Q: Does feasibility include if the alternative is available for mass manufacturing. Small batches are one thing, but mass manufacturing may not be supported by raw material suppliers. How would this be addressed?

A: That's certainly something we would consider. If only one small company makes an alternative, we likely would not deem the alternative as widely available. But we have not yet thought through other characteristics.

Q: How will Ecology define "performance requirements"? Consider two similar products. One product is designed to perform over 25 years. The other is designed to perform for a year and be tossed. What are the "performance requirements"?

A: It would depend on the particular application of the chemical in the product. If lasting 25 years is considered necessary for the product's performance, then that would be a performance requirement.

Q: Is cost of a safer alternative ever considered in this process?

A: The Interstate Chemicals Clearinghouse Guide considers whether the alternative is close to the current in terms of price, but "close to the current" is not yet defined, and may depend on the product-chemical combination.

Q: Does the feasibility analysis account for potential costs for retooling and or reformulating? Many alternatives assessments that I've seen assume drop-in replacements are possible, however this is rarely the case.

A: Our analysis (as we described) only looks at whether it's available on the market already. We likely would not look at the cost of retooling products, because this is a relatively surface-level analysis of what is and is not available. If we find an alternative that is not widely available, we could consider retooling, but if not, we may not get there. In Phase 4, an analysis of retooling would be part of the economic documents required as part of the rulemaking process, which includes the economic impact statement, the cost benefit statement, and a small business impact statement.

Q: It seems clear that an unintended consequence could be the generation of additional solid waste (higher product turnover), which probably isn't something Ecology would want to happen.

A: During the webinar, the Safer Products for WA team asked for follow up on the question. **Additional clarification**: That is something we would possibly consider when looking at alternatives, but it would likely depend on the specific product and how it was used. Waste reduction is important, but unless it directly relates to the feasibility of the product, it is not something the law directs us to consider.

Q: Will the performance evaluation include a look at other factors like consumer safety? For example, if an alternative flame retardant is identified as "less toxic" but may not provide an equal level of fire resistance, will that be factored in?

A: Yes, these are two separate processes. The safer process follows the criteria we outlined. If the alternative did not meet requirements in terms of performance for fire resistance, then we would deem that alternative not feasible for the application.