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**Public Health**   
Seattle & King County

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Hazardous Waste and Toxics Reduction Program  
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Phone: 360-407-6700  
[SaferProductsWA@ecy.wa.gov](mailto:SaferProductsWA@ecy.wa.gov)

Dear Hazardous Waste and Toxics Reduction Program:

**RE: Support for Safer Products for Washington Cycle 2 Implementation Phase 2 Draft Identification of Priority Products Report to the Legislature**

Public Health – Seattle & King County (PHSKC) thanks the Washington State Department of Ecology (Ecology) for the opportunity to comment on the Draft Identification of Priority Products Report to the Legislature: Safer Products for Washington Cycle 2 Implementation Phase 2. This phase, identified the priority consumer products that are significant sources or uses of priority chemical classes, is important for our efforts in King County to eliminate exposures of harmful contaminants of emerging concerns (CECs) to our residents and reduce sources of CECs that enter our waste systems and, ultimately, the environment.

PHSKC is the local public health department for King County, the 13th largest county in the US, which includes 39 cities, including the City of Seattle, and unincorporated areas. The department serves approximately 2.3 million people of King County who reside in urban, rural, shoreline, foothill, and mountain communities with distinct environments and unique public health needs. PHSKC commits to improve health equality and social justice and public health conditions for all residents. PHSKC appreciates the efforts described in this report by Ecology and the Washington State Department of Health (DOH) to identify high priority CECs that are known to be harmful to humans and the environment, prioritize products containing these CECs, and to address their impacts on vulnerable populations and the environment.

PHSKC fully supports the robust and transparent approach adopted to identify priority products and CEC classes in this phase. The inclusion of equity-focused evaluations and emphasis on reducing disproportionate exposures to harmful CECs among sensitive populations aligns well with PHSKC's principles and commitment. To further enhance the effectiveness of the actions in this program, improve source control, promote health equity, and prevent broader high priority CECs from entering our environment, PHSKC has the following comments:

**Include both 6PPD and 6PPD-quinone in the evaluation process since 6PPD is easily transformed into 6PPD-quinone which could be more toxic.**

PHSKC supports the decision in this report to evaluate 6PPD in artificial turf. As a highly toxic quinone transformation product of 6PPD, [6PPD-quinone](#) generates easily from 6PPD during gas-phase ozone exposure and poses substantial ecological risks. Both 6PPD and 6PPD-quinone have been detected in both environmental media (including waterbodies, air, sediments, dust and soil) and human biological samples (including blood, urine, and cerebrospinal fluid), raising significant public health concerns due to its environmental persistence and potential toxicity.

Evidence from [a current study](#) has reported that after exposure, 6PPD can be transformed to 6PPD-quinone, making a potential greater concern than expected. What's more, 6PPD and 6PPD-quinone can form 6PPD-N-N-6PPQ-quinone dimer which is considered more hydrophobic and more likely to be bioaccumulated and to pose further health risks. Thus, PHSKC recommend including the evaluation of both 6PPD and 6PPD-quinone in prioritized products to further decrease the risks of 6PPD/6PPD-quinone exposures and potential impacts. Given that young children also spend much time in places, such as playgrounds and tracks, where crumb rubber is used, PHSKC recommend including these places to the current evaluation process to protect the children that are sensitive to chemical exposures.

**Include other PPDs and PPD-quinones in the evaluation process since they are toxic and could probably be used as alternatives if 6PPD is restricted or banned.**

Given the growing toxicological research on 6PPD and 6PPD-quinone, regulatory authorities are gradually paying more attention to this matter and some manufacturers or producers are likely exploring homologous chemicals as alternatives. Various PPDs and PPD-quinones have been detected in [indoor dust](#), [roadside soil](#), [urban runoff](#), and [air particles](#). Considering the real solutions, PHSKC recommends including other PPDs and PPD-quinones besides 6PPD and 6PPD-quinone in the evaluation process, particularly the ones that have been detected in human biological samples or environmental media or have been shown to be toxic. For examples, IPPD and IPPD-quinone are found in [indoor dust](#), are developmental toxicants in [fish](#) models, and induce contact allergy to [humans](#); DPPD and DPPD-quinone are found in [indoor dust](#) as well, can induce intestinal toxicity in [nematodes](#) and reproductive and developmental toxicity in [rats](#). It cannot be assumed that other PPDs or PPD-quinones will be less toxic than 6PPD and 6PPD-quinone. For example, 6PPD-quinone is super toxic to coho salmon, while [77PD-quinone](#) causes lethality in *Caenorhabditis elegans* at a lower concentration than 6PPD-quinone does. This could be due to the highly species-specific toxicity of PPDs. Also, although low concentrations of one individual type of PPDs/PPD-quinones is not likely to induce significant health impact, the combined effects led by a mixture of multiple PPDs/PPD-quinones can be distinct and should not be ignored. New information is rapidly emerging on this new chemical class and we recommend Ecology to consider the class as a whole, not just the quinone given that it appears that 6PPDs are utilized in other products, it can form different dimer combinations with the known quinone form, and a class approach will more rapidly deter regrettable substitutions.

**Include Electronic devices and accessories as a priority product category to better address potential disproportional exposures and improve source control.**

“Electronic devices and accessories,” which would include but not limit to desktop computer, laptop computer, tablet, smartphone, smartwatch, television, camera, charger, headphones/earbud, mouse, keyboard, external hard drive, protective case, and data cable, that PHSKC proposes for inclusion in this evaluation since multiple high priority CECs, including [PFAS](#), [PPDs/PPD-quinones](#), and [many others](#), have been found at high concentrations in electronic/e-waste recycle sites. In addition, a recent [epidemiological study](#) found that the urinary 6PPD and 6PPDQ concentrations in children from e-waste areas are significantly higher than that among children from general areas, suggesting e-waste could be another main source of environmental and human exposure to some high priority CECs like 6PPD/6PPD-quinone. Given the thriving development of the IT industry in Washington and the widespread use of these electronic devices and accessories, especially during and after the pandemic with the increase in the virtual events and remote work, the state should pay particular close attention to the electronic category. [Study](#) shows some black plastics may contain certain harmful chemicals, including flame retardants, where the recycled plastic from e-waste could be the source for these chemicals. This could be another reason to include electronic devices and accessories in the current evaluation process. This would be an effective way to eliminate potential disproportional exposures and to reduce harmful CECs exposure for a broad range of individuals.

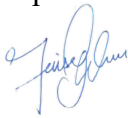
**Considerations for proposed actions on Ortho-phthalates.**

PHSKC fully supports Ecology’s work on fragrances since 40% of the cosmetics and personal care products on the market today contain fragrances which are not required to be labelled and fragrances can contain various harmful [chemicals](#), such as [volatile organic compounds \(VOCs\)](#), some of which are known carcinogens (e.g. ethanol) or hormone-disruptors (e.g. phthalates). However, except the current included products focused on ortho-phthalates (beauty, personal care products, vinyl flooring, electric and electronic products, recreational wall padding, polyurethane foam recreational products, laundry detergent, drink can linings, and thermal paper), PHSKC recommends to also include the evaluation on fragrances in sealants, scented home products (e.g., garbage bags and air fresheners), and scent products for clothing (e.g., scented sprays, clothes softeners, dryer sheets, and scent booster beads used in laundry)

PHSKC fully supports Ecology’s decision on including sealant, caulks, and adhesives for ortho-phthalates evaluation. However, since many [sealants](#) also contain [PFAS](#), PHSKC encourages Ecology to identify the products for both ortho-phthalates and PFAS evaluations and to seek safer alternatives that cover both chemical classes for these products. If no safer alternatives can be identified for these two priority chemicals, then separate evaluations should be done for each priority chemical alone and effectively communicated to the public to limit confusion between the separate products evaluated for each chemical class.

PHSKC thanks Ecology again for the opportunity to comment on the draft identification of priority products report to the legislature: Safer Products for Washington Cycle 2 Implementation Phase 2, and for the huge amount of work that staff conducted to address concerns from harmful CECs exposures in high priority products and to adopt the transparent approach for prioritizing the emerging harmful chemicals and products. Please do not hesitate to reach out to our toxicology team through Dr. Shirlee Tan ([shirlee.tan@kingcounty.gov](mailto:shirlee.tan@kingcounty.gov)) or Dr. Bai Li ([bali@kingcounty.gov](mailto:bali@kingcounty.gov)), with any questions.

Respectfully,

A handwritten signature in blue ink, appearing to read "Faisal Khan".

Dr. Faisal Khan, Director  
Public Health – Seattle & King County