



American Forest & Paper Association

January 28, 2022

Attn: Cheryl Niemi
Safer Products Washington
Hazardous Waste and Toxics Reduction Program
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7696

Re: Comments Regarding Bisphenol A/Bisphenol S (BPA/BPS) and Thermal Paper

Dear Ms. Niemi & Safer Product's Program:

On behalf of the American Forest & Paper Association (AF&PA), I am writing in opposition to the Safer Products report ("report") currently under consideration regarding regulatory determinations for BPA, a chemically similar BPS and subsequently, thermal paper as a priority product.

AF&PA respectfully submits that the underlying scientific data used in the report to determine that BPA and BPS should be categorized as chemicals of concern is unsound and that the alternatives identified in the report are not practicable. or are not viable from a market-access perspective.

AF&PA serves to advance U.S. paper and wood products manufacturers through fact-based public policy and marketplace advocacy. The forest products industry is circular by nature. AF&PA member companies make essential products from renewable and recycle resources, generate renewable bioenergy and are committed to continuous improvement through the industry's sustainability initiative — [*Better Practices, Better Planet 2030: Sustainable Products for a Sustainable Future*](#). The forest products industry accounts for approximately 4 percent of the total U.S. manufacturing GDP, manufactures nearly \$300 billion in products annually and employs approximately 950,000 people. The industry meets a payroll of approximately \$60 billion annually and is among the top 10 manufacturing sector employers in 45 states.

Key Areas of Concern:

- 1. Incomplete Literature Review and Improper Integration of Data Regarding the Risks of BPA to Humans**
- 2. Identified Alternatives are Not Practicable**
- 3. Technical Implementation Issues**

AF&PA members are committed to ensuring the safety of their products, including the safety of chemicals used in their manufacturing processes. AF&PA believes chemical and product-related legislation and regulations should be protective of public health, cost-effective and based on the best available science.

The report makes broad statements that the use, disposal, and recycling of thermal paper contributes to bisphenol contamination in the environment, and that bisphenols are found in wastewater treatment plant effluent. However, no evidence is provided that the cause of such contamination is attributed specifically to thermal papers, making the assertions speculative. The report further stated that recycling thermal paper is considered an important route of environmental contamination by bisphenols, but based this assertion on data as reported in Europe (Aschberger et al., 2008) and Japan (Terasaki et al., 2007). These are not current studies, and the results in other countries may have no relevance to recycling operations and recovered paper processing in the United States.

1.) Incomplete Literature Review and Improper Integration of Data Regarding the Risks of BPA to Humans

We urge Ecology to rewrite this document with appropriate review of relevant studies and proper integration of human data.

Unfortunately, Ecology conducted a truncated review of the available reviews and information on BPA and did not discuss the vast knowledge of information developed by the U.S. Food & Drug Administration (FDA) on the relevance of BPA exposure to human health.

The FDA previously evaluated the body of BPA toxicology data and determined that BPA is safe at current exposure levels. Although consistent with the assessment of some other regulatory agencies around the world, this determination of BPA safety continues to be debated in some scientific and popular publications, resulting in conflicting messages to the public. Thus, the National Toxicology Program (NTP), National Institute of Environmental Health Sciences (NIEHS), and FDA developed a consortium-based research program to link more effectively a variety of hypothesis-based research investigations and guideline-compliant safety testing regarding BPA. This collaboration is known as the Consortium Linking Academic and Regulatory Insights on BPA Toxicity (CLARITY-BPA).

The report discusses the toxicological hazards of bisphenols in its Draft Regulatory Determinations Report to the Legislature, November 2021. It states that, "The hazards of BPA are well-documented, and several agencies have published hazard assessments on BPA." The simple use of animal data to discuss the hazards of BPA is misleading to the public, and the Department appears to have arbitrarily chosen winners and losers in this exercise by improperly conducting integration of data. Human data or non-human primate data must be relied on and integrated into the Department's decision-making process. In addition, there is relevant information on humans in the literature directly discussing the exposure and risk of BPA from retail store receipts. For example, the relevant route of exposure from receipt papers (dermal) is dramatically different than animal testing using oral gavage or intraperitoneal injection.

Further, Ndaw, et al., 2016^j, reported on the occupational exposure of cashiers to BPA via thermal paper. The authors also noted that the general population exposure to BPA through diet is well documented. The authors reported that, in cashiers who handled thermal receipt paper daily, there was no significant increase in free BPA concentrations in urine. The unconjugated (or free) BPA is considered to be the biologically active form for the effects related to estrogen receptors. Therefore, these findings have great implications for determining risk from this exposure. In this case, no exposure yields no risk. This empirical study is also important since most available data on occupational exposure to BPA

through thermal paper have been obtained from models or from simulated experiments. The authors also discussed the European Food Safety Authority (EFSA) opinion (2015) on non-dietary sources (dust, cosmetics, thermal paper) of BPA. The expert panel of EFSA concluded that there was no health concern from dietary or aggregated exposure.

Additionally, Liao and Kannan (2011)ⁱⁱ studied and published on the occurrence of BPA in paper and paper products, including thermal receipt papers, and the implications for human exposure. The authors stated that BPA was detected in receipt papers and a daily intake of BPA through dermal absorption from handling papers was calculated. The authors described these exposures for the general population and occupationally exposed individuals as “minor” compared with exposure through diet.

These studies contradict the claim made in the report that states, "Restricting the use of bisphenols in thermal paper would reduce a significant source of exposure..."

Summary of FDA's Current Perspective on BPA in Food Contact Applications

FDA's current perspective, based on its most recent safety assessment, is that BPA is safe at the current levels occurring in foods. Based on FDA's ongoing safety review of scientific evidence, the available information continues to support the safety of BPA for the currently approved uses in food containers and packaging.

FDA's regulatory Centers and FDA's National Center for Toxicological Research continue to pursue a set of studies on the fate of BPA in the body from various routes of exposure and the safety of low doses of BPA, including assessing novel endpoints where questions have been raised.

Research studies listed on FDA's website by FDA's National Center for Toxicological Research have:

- Found evidence in rodent studies that the level of the active form of BPA passed from expectant mothers to their unborn offspring, following oral exposure, was so low it could not be measured. The study orally dosed pregnant rodents with 100-1000 times more BPA than people are exposed to through food and could not detect the active form of BPA in the fetus 8 hours after the mother's exposure.
- Demonstrated that oral BPA administration results in rapid metabolism of BPA to an inactive (conjugated) form. This results in much lower internal exposure of BPA (i.e., the active form) than what occurs from other sources of exposure such as injection.
- Found that primates (including humans) of all ages effectively metabolize and excrete BPA much more rapidly and efficiently than rodents.
- Developed physiologically based pharmacokinetic models that can be used to predict the level of internal exposure to the active and inactive forms of BPA. Based on the effects of metabolism, internal exposures to the active form of BPA following oral administration are predicted to be below 1% or less of the total BPA level administered.
- Completed a rodent subchronic study intended to provide information that would help in designing a long-term study that is now underway. The subchronic study was designed to characterize potential effects of BPA in a wide range of endpoints, including prostate and mammary glands, metabolic changes, and cardiovascular endpoints. The study included an *in utero* phase, direct dosing to pups to mimic bottle feeding in neonates, and employed a dose range covering the low doses where effects have been previously reported in some animal studies, as well as higher doses where estrogenic effects have been measured in guideline oral studies. The results of this study showed no effects of BPA at any dose in the low-dose range.

In conclusion, FDA states that BPA concentrations in food are represented as safe. BPA in thermal receipt paper exposes individuals to a lower dose than food. Therefore, BPA concentrations in receipt papers are safe.

2.) Identified Alternatives are Not Practicable

AF&PA believes the recommendations in the Department's Draft Regulatory Determinations Report to the Legislature as they relate to thermal papers do not adequately demonstrate the recommended alternatives are safer, feasible or available as proposed. Moreover, the scope of impacted products being limited to receipts does not adequately address the full scope of implications to thermal paper.

Therefore, the Department should conduct a thorough benefit-cost analysis, and collect relevant stakeholder input, before making a final recommendation or rule.

a.) Regarding Pergafast201

U.S. manufacturers do not use bisphenol A as a developer in the production of thermal papers. While Pergafast 201 may meet the technical performance criteria as a developer in direct thermal paper applications and may be in use by some thermal paper producers, there are practical limitations that the Department has not adequately addressed.

Major U.S. producers of thermal papers have chosen not to use the alternative chemical (Pergafast 201) as a substitute developer due to the potential adverse health risks associated with aquatic toxicity, with indicators that it is toxic to aquatic organisms and persistent in the environment. In the EPA *Bisphenol A (BPA) Alternatives in Thermal Paper* report assessment, every chemical alternative to BPA, including Pergafast 201, was found to pose 'High' or 'Very High' hazard in at least one health or environmental endpoint. Specifically, the EPA risk evaluation stated Pergafast is a moderate hazard to reproductive and developmental human health. It is also highly toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment, rated as 'High' for Aquatic Toxicity and 'Very High' for Environmental Persistenceⁱⁱⁱ. AF&PA finds it inconsistent that the Department would recommend a chemical with known aquatic risks, given its stated goal to protect and preserve the health of Puget Sound.

The Department has indicated, through stakeholder Q&A, that the recommendation of Pergafast 201 represents taking a 'small step' toward optimal chemical alternatives. Without knowing how many 'steps' the Department has in mind, it is unreasonable to expect industry to make multiple, extensive changes in product chemistry, over an unknown period, toward achieving the Department's ultimate safer product goal.

As an alternative, Pergafast 201 fails to meet the criteria that it is offered for sale at a price that is close to current chemicals being used. A 2021 study recently found that thermal paper made with Pergafast 201 was the most expensive alternative, concluding that this is due to the fact the source for this developer is a single producer^{iv}. The current thermal paper market is highly competitive. U.S. Thermal paper producers have reported that thermal paper customer price sensitivity, particularly for point-of-sale applications is high. Producers have reported that the price of Pergafast 201 is generally 300% higher than current developer chemicals.

Phenol-free thermal papers are estimated by market subject matter experts to be roughly 10% of the overall thermal paper market. While Pergafast 201 may be commercially available, the Department has not assessed the availability issue of whether it would be accessible in sufficient quantities should thermal paper producers attempt to substitute Pergafast 201 in their entire thermal paper production.

The Department of Ecology recommendation of alternatives as being feasible and available, based on meeting any one of multiple criteria it has established, in the absence of stakeholder input, or without regard to weighting, indicates an inherent bias, and disregard for the practical application or viability of

such recommendations. Phenol-free thermal paper options already exist in the U.S. market and are available for customers who want to purchase them, making a regulatory mandate unnecessary.

The aquatic toxicity of Pergafast 201 is high and may cause long-term adverse effects in the aquatic environment, raising questions about its safety and use in thermal papers. Therefore, its use as a developer in thermal paper, based on the necessity to adhere to Washington state regulations, should be reconsidered. Those environmental risks, coupled with the unknown availability of Pergafast 201 at an increased scale and cost, and uncertainty of how Pergafast 201 aligns with the Department's ultimate vision of what constitutes a safer product, makes the substitution of Pergafast 201 in thermal paper questionable at best, and potentially untenable.

b.) Regarding Digital Substitution (E-Receipts)

The scope of thermal papers includes cash receipts, bank teller receipts, industrial barcodes, self-adhesive labels, transport tickets, parking tickets, lottery tickets, travel luggage tags, point of sale (POS) terminal receipts, ATM receipts, etc. While the Department did acknowledge that some thermal paper applications, such as e-commerce shipping labels, may not have a reasonable digital substitute, it did not offer alternatives, which indicates it either does not have suggestions as to how to address multiple thermal paper products, or its digital recommendation is a theoretical option without practical application.

Digital substitution to restrict the use of bisphenols in thermal paper in the state of Washington is not a feasible alternative. There is precedent that digital receipts are not a viable alternative to paper receipts.

California legislation that would have mandated electronic receipts as a substitute for printed receipts was defeated. There are a multitude of reasons why electronic receipts are not feasible. The cost of digital substitution for receipts in Washington would be steep. Many businesses and point-of-sale terminals do not have the capability of generating electronic receipts and would require very expensive modifications or replacements to do so. This would be particularly onerous to small business owners and state agencies that rely on thermal paper, such as the Washington State Lottery.

Point of sale software providers like Square and others that link credit card numbers to an associated email account to deliver digital receipts collect purchase data for a variety of means which customers may not know about, in addition to unwanted email marketing. In addition, businesses would face problems with transaction efficiencies, increased wait times while customers input personal contact data information at the register, costly investments in employee training, and increased liability for the protection of customer privacy.

Many businesses use paper receipts to match orders with goods purchased by consumers and to fight against shoplifting. Day-to-day sales transactions would exponentially expose personal information to digital databases, increasing the risk of identity theft or fraud.

3.) Technical Implementation Issues

It is highly unlikely that upstream supply chain partners would have any knowledge that the thermal papers they purchase as their part of the supply chain would be sold, distributed, or delivered into the state of Washington.

Unlike other products that have a direct sales path to the ultimate consumer or retailer, thermal paper products are usually not sold directly to end consumers, but through a complex supply chain that may involve paper converters, printers, distributors, and re-sellers, with products in the form of paper rolls, receipt rolls, thermal paper rolls, cash register rolls, or jumbo rolls.

This raises the question of how the Department would have the legal nexus or authority over thermal paper products entering Washington through multiple states, or how to manage or enforce rules for e-commerce business for packages with thermal paper shipping labels from all over the U.S. and abroad.

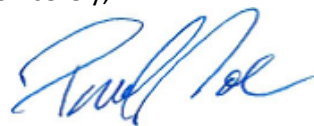
Conclusion

Thermal papers are complex products with sophisticated chemistries that must work together to achieve the intended performance. U.S. thermal paper producers have recognized consumer concerns with BPA. Producers have ceased using BPA despite EPA's and FDA's ongoing safety reviews of scientific evidence and related conclusions that BPA is safe for use in food containers and packaging. The multiple performance specifications of thermal papers have made the transition to alternatives that meet Federal requirements, as well as cost and availability marketplace needs, an ongoing process. The paper industry cannot afford, or find it feasible in its supply chain, to go through a patchwork approach unique to the regulatory requirements of one state for a wide variety of products produced for nation-wide and international distribution and use.

We appreciate the Department acknowledging our industry's success at establishing voluntary, market-based solutions for paper recycling and recovery. Paper is a recycling success. The paper recycling rate has grown over the decades, and remains consistently high, meeting or exceeding 63 percent since 2009^v. The paper recovery rate in the U.S. was 65.7 percent in 2020, a year of unprecedented market changes and recycling shutdowns. This speaks to the strength and resilience of the paper and paper-based packaging recovery while technological innovations in product design and recycling processes are continuously allowing our industry to access and recycle more paper-based products.

Thank you for the opportunity to provide input. We stand ready to assist the Department of Ecology and offer our expertise as a resource as dialogue continues this important issue. For help with questions and additional information, please feel free to contact Erin Hall, Manager, Government Affairs at (360) 888-5532 and erin_hall@afandpa.org or our legislative advocate, Bill Stauffacher, at (253) 209-4301.

Sincerely,



Paul Noe
Vice President, Public Policy
American Forest & Paper Association

References cited:

ⁱ Ndaw, S., Remy, A., Jargot, D., Robert, A. (2016) Occupational exposure of cashiers to bisphenol A via thermal paper: urinary biomonitoring study. *Int. Arch Occup Environ Health*. 89:935-946

ⁱⁱ Liao, C. and Kurunthachalam, K. (2011) Widespread occurrence of bisphenol A in paper and paper products: implications for human exposure. *Environmental Science & Technology*. 45, 9372-9379

ⁱⁱⁱ https://www.epa.gov/sites/default/files/2015-08/documents/bpa_final.pdf

^{iv} https://ediss2.sub.uni-hamburg.de/bitstream/ediss/9101/1/PHDTHESIS_TaiwoFagbemigun_05072021.pdf

^v <https://www.paperrecycles.org/media/news/2020/05/12/u.s.-paper-industry-achieves-consistently-high-recycling-rate>