ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

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Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

To Whom It May Concern:

I write today providing feedback to the Minnesota Pollution Control Agency's (MPCA) request for feedback on proposed rule concepts for PFAS in products: Currently unavoidable use under Minn. Stat. 116.943.

1. **Who is commenting?**
   Representative of a product manufacturer(s)

2. **If you are commenting as a representative, what is the name of the entity you are commenting on behalf of?**
   Association of Home Appliance Manufacturers

3. **If you represent a product manufacturer or industry group, what industry(ies) do you represent?**
   AHAM represents manufacturers of major, portable and floor care home appliances, and suppliers to the industry. AHAM's members produce hundreds of millions of products each year. Appliance manufacturers employ a complex, global supply chain for thousands of models with hundreds of thousands of components, often involving multi-tiered suppliers located on multiple continents with thousands and thousands of components. In Minnesota, the home appliance industry is a significant and critical segment of the economy. The total economic impact of the home appliance industry to Minnesota is $3.6 billion, more than 20,000 direct and indirect jobs, $468.5 million in state tax revenue, and more than $1.2 billion in wages.

4. **If you represent a product manufacturer, what types of components, products, or product categories do you manufacture that you will be requesting a CUU determination for?**

   AHAM supports the intent to protect consumers against all unreasonable risks, including those associated with the exposure to potentially harmful chemicals. AHAM also firmly supports the appropriate use of PFAS chemicals in appliances. Together with industry design practices, test requirements, and redundant safety mechanisms, PFAS chemicals play an important role in the safety, performance, efficiency, and durability of household appliances. These chemicals help appliances withstand the extreme conditions of daily use and perform safely for years PFAS chemicals are used in a variety of materials found in appliances including wires and cords, nonstick coating, printed circuit boards, batteries and hydrofluoroolefins (HFOs) which are

climate friendly alternatives for use as refrigerator insulation foam-blowing agents. These components are often deeply embedded within the product and do not present a high risk of direct human exposure. Individual manufacturers may submit their own request related to a CUU determination, but below are common uses of PFAS in home appliances:

Applications	Parts containing PFAS	PFAS	PFAS properties
Parts	Insulation on cables, wires, connectors, etc.	PTFE, PFA, FEP, PVDF	Electrical insulation, heat resistance, flame retardancy
	Rubber seals, gaskets	PVDF, PTFE	Heat resistance, chemical resistance, gas barrier
	Gears, ball bearings	PTFE, PVDF	lubrication, heat resistance
	Flame retardants of plastic parts	PTFE, KFBS	Flame retardancy
Battery materials	Binder of Lithium-ion batteries, gaskets	PVDF	Heat resistance, chemical resistance, gas barrier
Chemicals	Refrigerant for Refrigerators, air conditioner, chillers, Foam Blowing agents	Hydrofluoroolefins (HFO/HCFO's)	Refrigerant, cooling
	Greases, lubricants	PTFE, PFPE[1]	Lubrication, chemical resistance, gas barrier

For refrigerators and other complex, durable goods, HFOs offer environmental and safety benefits including ultra-low Global Warming Potential (GWP), high insulating performance and energy efficiency. HFO blowing agents are a key technology option used by some manufacturers to meet existing U.S. Department of Energy appliance energy conservation standards. Restricting high-performance materials such as HFOs reduces insulation performance, leading to increased energy consumption and potentially higher consumer utility bills.

5. Do you have any recommended changes or other considerations that you think the MPCA should take into account when defining the term "essential for health, safety, or the functioning of society" (Please review the proposed definitions prior to answering)

The draft definition identifies a use as essential if its unavailability results in a "significant increase in negative health outcomes" or "significant disruption of commercial, public, or ecosystem services." While the draft includes sub-items for food, water, and hygiene, it does not explicitly acknowledge the role of household appliances in maintaining these services. Home appliances are the primary mechanism through which modern households achieve food preservation and sanitation. Refrigeration is critical for preventing foodborne illnesses and storing temperature-sensitive medicines. Dishwashers and clothes washers are at the forefront of hygiene, reducing the spread of pathogens through standardized, high-temperature cleaning cycles. We recommend that the definition be broadened to explicitly include "household appliances": "A significant disruption of *household appliances,* or commercial, public, or ecosystem services on which society relies, including…" While the MPCA evaluates the societal, environmental, and health costs of continued PFAS use, these must be balanced against the broader societal risks associated with restricted access to essential technologies.

6. **Do you have any recommended changes or other considerations that you think the MPCA should take into account when defining the term "alternative"? (Please review the proposed definitions prior to answering)**

For household appliances, functional equivalence cannot be judged solely on a component's primary purpose, it must also encompass durability and safety under the stress of the product's intended lifecycle. The use of PFAS in appliances is often not a choice but a requirement dictated by international safety standards. Compliance with IEC 60335-1 (Safety of Household Electrical Appliances) requires materials that can withstand high temperatures and concentrate voltage without breakdown. A non-PFAS gasket that performs well in a single laboratory test but fails after 1,000 cycles in a high-heat oven is not functionally equivalent to a PFAS-based gasket designed for 10,000 cycles. If an alternative material increases the risk of fire, electric shock, or premature failure, it cannot be considered a viable substitute, and the alternative would not produce a "functionally equivalent product." We recommend that MPCA further define "functionally equivalent product" in the rule, such that alternatives are not judged solely on the primary purpose of the component or product being met, but also considering important aspects such as performance, safety, durability and should consider whether the substitute is deployable at scale. Reduced appliance durability shortens product lifespans, escalating consumer costs for repairs and causing products to reach end-of-life prematurely. The definition should also account for lifecycle impacts, particularly energy efficiency in real world conditions.

The analysis should include downstream operating costs and system redesign/recertification costs, not just material price. Manufacturing conversion and product redesigns could take eight or more years because of requirements to upgrade manufacturing facilities with additional safety and flammability precautions, procure and install new equipment, establish new supply chain, and redesign products to be compatible with new requirements. In addition, appliance manufacturers rely on a global supply chain for components and subcomponents. Any CUU evaluation should take these important global considerations into account. Incorporating these feasibility and lifecycle factors into "alternatives" will help ensure substitutes are technically viable, compliant, and affordable in practice.

7. **Do you have any recommended changes or other considerations that you think the MPCA should take into account when defining the term "reasonably available"? (Please review the proposed definitions prior to answering)**

The definition for "reasonably available" should reflect the need to evaluate alternatives using a broader set of considerations beyond cost, quantity, or performance. In practice, determining reasonable availability requires accounting for safety, energy efficiency, toxicity, flammability, and supply chain considerations. If an entire industry were to switch on a short timescale from one chemical to another, this would create significant scale-up pressures on existing manufacturers and relevant supply chains.

The current timeline for CUU's creates uncertainty and is putting manufacturers in a very difficult and tight position to meet the 2032 ban, especially since the ban focused on the date of sale/distribution of products in Minnesota which essentially means manufacturers may need to have products and components updated no later than early 2031. The agency has indicated that work on the CUU rule may be paused or delayed in 2026 to focus staff resources on July 1, 2026, reporting deadline. If a final CUU rule is not adopted until late 2027, manufacturers will have less

than four years of certainty to make multi-million-dollar investments in product redesigns. This lack of regulatory clarity forces manufacturers into a high-risk planning environment where they must either guess which exemptions will be granted or preemptively discontinue essential products. The rapidly approaching 2032 deadline is requiring manufacturers and their suppliers to start to make significant product planning decisions, given the lead-time needed from design to production of appliances, which can take several years. In these cases, products must be carefully redesigned, reengineered, and recertified.

Perhaps the most concerning element of the draft rule is the proposal that the definition of "reasonably available" is focused solely on comparable performance and availability. The exclusion of cost from the determination of an alternative's availability is economically irrational. The appliance industry operates in a highly competitive global market where affordability is a key component of consumer access to essential goods. If a non-PFAS alternative significantly increases the cost of a product, it is not "reasonably available" to the low-income families who rely on that appliance for food safety and hygiene. Ignoring these costs in the CUU process could lead to the discontinuation of affordable product lines, which hurts Minnesota consumers. We recommend that "cost" is added to the definition of "reasonably available", and not just information that is required in the assessment of alternatives.

As in the evaluation of "alternatives," MPCA should consider further defining what encompasses "perform comparably". This should not only take into consideration the functional performance of a product (e.g., how well a washer can clean), but also relevant performance aspects like safety, efficiency, and durability. The term "currently available in sufficient quantity" should also be clarified such that it considers any regional differences in the availability of non-PFAS components or products. For example, a non-PFAS component or product that is not available or cost-prohibitive in the United States for domestic manufacturers, or globally for foreign manufacturers, should not be considered "currently available in sufficient quantity." These otherwise risks creating unintentional competitive imbalance between manufacturers.

8. **When considering the proposed definition of "product category", how broadly should the agency group product categories? (Examples: "vehicles" versus "sedans, SUV's, vans, trucks, RV's" or "printers" versus "receipt printers, thermal printers, label printers, residential printers, commercial printers, etc.")**

In general, AHAM members expressed support for both narrow and broad product category definitions. AHAM believes that a hybrid approach would best support appliance product exemption requests by enabling product-specific evaluations while also accounting for components, parts, materials, and subassemblies used across multiple product types. Under this framework, product-level assessments would ensure alignment with distinct operating conditions and safety requirements, while a component-level approach would avoid duplicative evaluations for common applications. The CUU process at the component level can apply across all appliances (major, portable, and floor care appliances) and would allow suppliers to file a single CUU for components used across all appliances (e.g., wiring, printed circuit boards, etc.) for performance and safety reasons. These components generally have similar properties and are shared across multiple models within an appliance product category. For example, insulated wiring used in refrigerators is also used in air cleaners (e.g., motors, control boards, and power supply functions). Despite differences in end products, the wiring serves a similar functional

purpose and is subject to comparable performance requirements, making it well-suited for a cross-cutting, component-level evaluation.

9. Should each request for a CUU determination be limited to a single product category, or should applicants be allowed to submit a request for a CUU determination for multiple product categories?

Given the similarities with components and to reduce regulatory burden for manufacturers and administrative burden for MPCA, we advise that CUUs applications allow the grouping of PFAS-containing commodities (components) that are similarly used across a variety of product categories. Otherwise, MPCA would require thousands of individual and unique requests for identical uses of PFAS in generic electronic components, which can be found across multiple types of appliances. Overall, AHAM members support allowing multi-product category submissions, as this approach would significantly reduce both industry reporting burden and administrative burden for MPCA. Without this flexibility, manufacturers would be required to submit multiple duplicative filings for similar, if not identical, components and parts containing PFAS across different product categories, potentially resulting in hundreds of redundant submissions. As mentioned earlier, a multi-category submission framework would enable manufacturers to demonstrate the need more efficiently and comprehensively for an exemption across their product offerings where common components are used, while also allowing MPCA to evaluate these use cases once in a consistent and streamlined manner.

10. What safety or other standards require the use of PFAS in a product? (Please include the specific citation)

AHAM members emphasize that, while PFAS are not explicitly prescribed by applicable safety or energy standards, PFAS-containing materials are often functionally necessary to meet critical performance thresholds required for compliance. These materials are selected based on their unique ability to deliver high-temperature stability, dielectric strength, electrical insulation, chemical resistance, and long-term durability under demanding operating conditions. In many appliance applications, components must perform reliably in high-heat, electrically energized, chemically exposed, and space-constrained environments, including areas adjacent to heaters, motors, compressors, power electronics, as well as in contact with steam, detergents, condensate, or oils. Examples of relevant standards and drivers' performance are below:

Standard	Why PFAS Is Used
UL/CSA 60335 series (Appliance Safety)	Components must maintain performance under high temperatures, meet dielectric and insulation requirements, and demonstrate resistance to ignition and degradation under abnormal conditions.
UL 858 (Electric Ranges)	High-heat cooking environments require materials that can withstand sustained elevated temperatures while maintaining electrical insulation and mechanical integrity.
UL 746A (Polymeric Materials)	Materials must meet electrical, mechanical, and thermal performance thresholds following environmental conditioning; fluoropolymers are sometimes used to maintain stability under these conditions.
ANSI Z21.1 (Gas Appliances)	Components must perform reliably in high-temperature and combustion-adjacent environments, including resistance to heat, chemicals, and aging.

Due to exposure to heat, most AHAM products are bound by flammability standards requirements, usually stemming from UL-94; UL-2043 is a fire test for heat and visible smoke for electronics/electronic components near air handling spaces. PTFE is frequently used as a dripping inhibitor in engineering plastics to meet UL 94 V-0 or V-1 ratings, ensuring plastic does not drip flaming material. Non-PFAS flame retardant could lead to inability to reach proper flame ratings and lower heat resistance.

11. **The agency is seeking feedback on the potential that the initial positive CUU determination duration for existing products will expire eight years from the date of issuance regardless of product category. This is intended to stagger renewal deadlines and ease the administrative burden of processing renewals. Do you have any concerns about unintended consequences with this proposal?**

MPCA proposes that initial positive CUU determinations for existing products expire after eight years. If determinations are effective eight years from MPCA approval, this effectively disincentivizes companies from submitting applications to MPCA early. We are concerned that this proposal will encourage late submissions, as close as possible to the proposed January 1, 2030, deadline for existing products. This gives companies more time beyond the 2032 prohibition to keep these existing products on the market. AHAM members have practical concerns with an eight-year expiration with respect to spare parts availability and long-term support obligations. An eight-year CUU expiration does not align with appliance service lifetimes or spare parts obligations and could unintentionally disrupt repairability and safety. Instead, we recommend that MPCA extend the expiration date to eight years from the date of the 2032 sales prohibition to January 1, 2040. This will prevent the unintentional creation of an incentive for late submission of CUU applications and will ease the burden on MPCA to review submissions that are more likely to be submitted early before January 1, 2030, deadline for existing products. We are also concerned about the need to renew CUUs for service parts containing PFAS used in discontinued products. A more appropriate approach would extend or exempt CUU approvals for replacement parts to ensure continued availability of compliant components throughout the product lifecycle. Manufacturers and component suppliers will likely not invest in non-PFAS alternative service parts for discontinued products. However, consumers would still want access to service parts during the useful life of their product. We recommend automatic CUU renewals for service parts of discontinued products for at least 10 years.

12. **The MPCA has developed a preliminary list of potentially eligible data categories that may be considered for trade secret requests. (Please review the list of potentially eligible data prior to answering) Do you have any concerns about unintended consequences with this proposal?**

CBI and proprietary technologies are important considerations. Absent appropriate CBI protection, many downstream users will be reluctant to file CUUs for consideration in a timely manner. Clear, tested process for handling CBI should be established. The MPCA should ensure that all confidential business information (CBI) submitted is afforded the protection this includes: 1) established process and procedures for protecting this information, 2) ensuring that any of

contractors that review the information do so under a separate confidentiality agreement; 3) notifying the submitter if MPCA believes any information submitted as CBI does not meet required criteria for protection.

13. What are the potential ongoing costs to society if the commissioner issues a positive currently unavoidable use determination for the continued use of PFAS within a product or product category? (For example: environmental, human health, or remediation costs)

PFAS are not a single substance but a broad and diverse group of chemistries with differing structures, properties, hazard profiles, and exposure pathways. Any assessment of potential impacts—positive or negative—must be based on specific substances and specific use cases, consistent with the statutory requirement that CUU determinations evaluate the particular function and conditions of use of a PFAS within a product. Similarly, if a PFAS use is not granted a CUU determination, the consequences of restricting that use would vary significantly depending on the material, function, and sector involved. These impacts are use and substance-specific, and their magnitude varies by sector, underscoring the need for evaluations to be conducted at the individual substance and use-case level rather than for PFAS as a broad class.

MPCA should also consider costs to society for a negative determination balance against those environmental, health, and remediation costs. This includes such things as:

- Increase to the risks to human health if a product must compromise safety performance when using a non-PFAS alternative (e.g., more fire risk, higher chance of electrical shock).
- Lower energy efficiency which leads to higher energy bills, more electrical generation, etc.
- Lower durability of appliances, which leads to lower lifetime

14. For manufacturers: Administrative cost of requesting a CUU determination (Part 1 of 2)

For components containing PFAS in which information is available, AHAM members overwhelmingly indicated it requires significant, multi-phase efforts that well exceed 500 technical staff hours, up to thousands of hours, required to compile information for complex durable goods. This process involves detailed supply chain mapping, supplier outreach and follow-up, data validation, CAS-level substance verification, and internal engineering and regulatory review. Additional complexity arises from legacy components, incomplete supplier disclosures, and the need to reconcile data across multiple systems and product platforms. As a result, the total effort to compile, verify, and document this information is substantial and cannot be reasonably achieved within a limited timeframe. The administrative cost is several orders of magnitude greater than MPCA anticipates based on their draft rule concept, and MPCA should more accurately reflect this in their analysis.

15. For manufacturers: Administrative cost of requesting a CUU determination (Part 2 of 2). Please provide your best estimates or rough orders of magnitude (for example "approx. 200 hours"). Precise accounting data is not necessary to answer this question.

AHAM members overwhelmingly identified that obtaining complete information on intentionally added PFAS from Tier 2 and Tier 3 suppliers for even a single product line would require a substantial level of effort, well exceeding 500 technical staff hours. Like the answer in question 14, this process involves extensive supplier identification and engagement, repeated data requests and follow-ups, translation of regulatory requirements, and detailed validation of responses at the CAS number level. Additional time is required to address gaps in supplier knowledge, manage non-responsive or global suppliers across multiple jurisdictions, and reconcile inconsistent or incomplete disclosures. Given these complexities, the effort to obtain accurate and verifiable data is both resource-intensive and time-consuming.

16. **For manufacturers: Expenditure considerations when seeking non-PFAS alternatives (Part 1 of 2). Please provide your best estimates or rough orders of magnitude (for example "primary cost is CapEx"). Precise accounting data is not necessary to answer this question**

Any meaningful feasibility assessment or early-stage testing program can reach hundreds of thousands to millions of dollars, underscoring the magnitude of resources required before technical viability can be determined. In general, AHAM members indicated that it is challenging to provide estimates of capital and operational expenditures associated with transitioning to non-PFAS alternatives, as impacts vary significantly depending on the specific application, material substitution, and product architecture. Importantly, the balance between capital and operational expenditures is highly company- and product-specific, driven by factors such as production volumes, legacy platform constraints, supply chain readiness, and the extent to which redesign is required. In many cases, manufacturers emphasized that transitioning away from PFAS is not a simple material substitution, but rather a system-level redesign effort, which amplifies both upfront capital investment and ongoing operational costs.

17. **For manufacturers: Expenditure considerations when seeking non-PFAS alternatives**

18. **For manufacturers: Research and development safety validation cycles. What is the typical duration of the R&D and safety validation cycle for a reformulated product in your sector (from concept to market entry)?**

A significant number of AHAM members indicated that they have conducted R&D feasibility studies in search of finding a viable alternative to PFAS. These efforts include material screening, laboratory-scale testing, and prototype development to evaluate alternative chemistries against critical performance requirements such as thermal stability, dielectric strength, chemical resistance, durability, and manufacturability. R&D efforts frequently involve close collaboration with suppliers as well as engagement with third-party testing laboratories to validate results. These ongoing R&D activities represent a significant investment of time and resources, underscoring both the industry's commitment to innovation and the complexity associated with transitioning away from PFAS while maintaining product safety, reliability, and compliance. With the strong caveat that if a technical alternative solution is viable, AHAM members indicated that the duration of an R&D and safety validation cycle for products would take approximately 34.8 months on average. Of note, some companies indicated the timeline is

still unknown due to unresolved technical feasibility and qualification challenges as well as any needed update to safety standards.

19. **Please provide any additional information or documentation needed to support your answers to any of the questions posed.**

The absence of a mandatory timeframe for MPCA completeness reviews creates significant planning uncertainty. To prevent manufacturers from facing planning penalties due to administrative resource constraints, the MPCA should adhere to a 30 to 60-day review cycle, with failure to meet this deadline resulting in an automatic CUU approval. For any CUU that is declined (including CUUs that were granted and then subsequently declined on reevaluation), manufacturers must be provided adequate time to transition to the alternative. We urge the MPCA to clearly define the criteria for judging successful or unsuccessful determinations to increase transparency and minimize back-and-forth to correct deficiencies in the initial request. Recommend detailing an appeals process for negative determination and allowing stakeholders to request extensions for rebuttal periods.

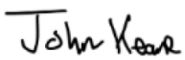
20. **Do you have any additional questions or comments regarding the PFAS in products: Currently unavoidable use rule? (Please note that we may be unable to respond to specific questions regarding rule content in this phase of the rulemaking process).**

While MPCA proposes what needs to be included in a request for a CUU determination, it is not exactly clear how MPCA will make these determinations. We are unclear how MPCA will evaluate the "CUU request content". Will there be objective criteria by which MPCA will judge and decide a successful or unsuccessful CUU determination? For example, it is not clear if all elements of the CUU request content will be evaluated equally, or if some are important for MPCA's evaluation. This improves the stakeholder transparency of what otherwise could be seen as a subjective and opaque process.

Additionally, stakeholders should have the ability to request an extension (e.g., an extension to the 30-day rebuttal period if there are a very high number of public comments) and stakeholders should be certain about the timeline by which MPCA responds to requests. We cannot have uncertainty that a request filed in 2028 has no deadline for MPCA to finish the completeness review, let alone a deadline to get to a final determination.

Thank you for considering our views and please contact me at jkeane@aham.org or 202-872-5955 if you would like to discuss in more detail.

Respectfully submitted,



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