Andrew Morley

Who is commenting? *(choose the best fit)*
Representative of a product manufacturer(s)

If you are commenting as a representative, what is the name of the entity you are commenting on behalf of?
Minnesota Chamber of Commerce

If you represent a product manufacturer or industry group, what industry(ies) do you represent?
Minnesota Chamber of Commerce

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 in the rule concept document prior to answering)*
See attached file.

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 in the rule concept document prior to answering)*
See attached file.

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 in the rule concept document prior to answering*)
See attached file.

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.")*
See attached file.

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?

See attached file.

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

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?
- Do you have any alternative recommendations to stagger renewal deadlines?

See attached file.

The MPCA has developed a preliminary list of potentially eligible data categories that may be considered for trade secret requests. *(Please review the rule concept document for the list of potentially eligible data)*

- Do you have any concerns about unintended consequences with this proposal?
- Do you have any alternative recommendations for data that should or should not be eligible for trade secret requests?

See attached file.

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)*
See attached file.

For manufacturers: Administrative cost of requesting a CUU determination (Part 1 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.*

If your company currently possesses information regarding intentionally added PFAS (to the CAS number level) for all components in your product lines, please estimate the number of technical staff hours that were required to establish this baseline.
Other (please specify)
See attached file.

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.*

If your company does not possess information regarding intentionally added PFAS (to the CAS number level) for all components in your product lines, please estimate the number of technical staff hours needed to obtain this data from your Tier 2 or 3 suppliers for a single product line.
Other (please specify)
See attached file.

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.*

If you have identified a technically viable non-PFAS alternative for one of your products that contains intentionally added PFAS, does implementing this alternative require Capital Expenditure (such as purchasing new molds, retooling machinery) or primarily Operational Expenditure (such as purchasing more expensive raw materials)?

- Please estimate the ratio of Capital Expenditure to Operational Expenditure (or indicate which category is the dominant cost driver).

See attached file.

For manufacturers: Expenditure considerations when seeking non-PFAS alternatives (Part 2 of 2).

If you have not identified a technically viable non-PFAS alternative for one of your products that contains intentionally added PFAS, have you conducted a Research & Development (R&D) feasibility study?

- If so, what was the cost of that study?

See attached file.

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)?

Does this cycle align with the 5-year renewal period typically associated with regulatory exemptions?

- If not, please explain the specific technical barriers that would require a longer validation period.

See attached file.

Please provide any additional information or documentation needed to support your answers to any of the questions posed.
See attached file.

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)*
See attached file.

March 29, 2026

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

To Who It May Concern:

I write today on behalf of the Minnesota Chamber of Commerce (Chamber), a statewide organization representing more than 6,300 businesses and more than 500,000 employees throughout Minnesota, commenting on the Minnesota Pollution Control Agency's (MPCA) proposed rule concepts for PFAS in products: Currently unavoidable use under Minn. Stat. 116.943.

Chamber comments are organized according to questions prompted by the agency in its SmartComment portal: https://mpca.commentinput.com/?id=fGW4cdeEZ.

Question 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 in the rule concept document prior to answering)*

The current definitions of "essential for health, safety, or functioning of society" in the rule concept document creates a patchwork with similar laws in other jurisdictions, including but not limited to other states and federal laws and state and federal safety requirements and certifications.

As written, the proposed language concept addresses specific categories which creates significant gaps in what qualifies as a CUU. The language as proposed should broaden and simplify significantly, like Maine's definition, or stay specific and add several more paragraphs and subparagraphs with more categories to capture products and components that are truly essential for the health, safety, or functioning of society.

We urge MPCA to harmonize with other enacted laws. Maine's Section 1614 of Title 38 defines *"Essential for Health, Safety or the Functioning of Society"* to mean:

> *Products or product components that if unavailable would result in a significant increase in negative healthcare outcomes, an inability to mitigate significant risks to human health or the environment, or significantly interrupt the daily functions on which society relies. Products or product components that are Essential for Health, Safety or the Functioning of Society include those that are required by federal or state laws and regulations. Essential for the Functioning of Society includes but is not limited to climate*

mitigation, critical infrastructure, delivery of medicine, lifesaving equipment, public transport, and construction.

Should MPCA want to list specific categories in rule language, we urge MPCA then add language to align the definition with /. Federal or state building or environmental codes, regulations, or requirements, along with agencies including, but not limited to, Environmental Protection Agency (EPA) Federal Aviation Administration (FAA), Department of Defense (DoD), National Aeronautics and Space Administration (NASA), Department of Homeland Security (DHS), and Department of Transportation (DOT), and sub-agencies.

Also for consideration in the definition of health, safety, and functioning of society, products that prevent further ozone-depleting substances and greenhouse warming potential gases consistent with EPA Significant New Alternatives Policy (SNAP) program approvals; packaging of a medical device or drug to prevent a product, component, or its packaging from meeting required standards necessary for clinical use; functionalities needed for aeronautics, aerospace, and defense safety; among other provisions.

Question 6: Do you have any recommended changes or other considerations that you think the MPCA should take into account when defining the term "alternative"?

Determining functional equivalency between one product and another is not simply dropping in one and expecting the same outcome. Functionally equivalent alternatives hinge on a number of factors, performance under varying extreme conditions, certification for safe use, compliance, and more. Not simplifying the discussion to simply change a product on a manufacturing floor does not do justice to the work required by manufacturers to allow for product alternatives.

When defining the term “alternative,” MPCA should consider whether a proposed alternative maintains durability over the expected service life of the product. An alternative that performs adequately in short term testing but degrades under real world operating conditions may increase failure rates, safety risks, and lifecycle environmental impacts. If the use of an alternative significantly reduces expected service life, it should not be considered functionally equivalent.

MPCA should also consider compatibility and performance under extreme operating conditions. An alternative must be compatible with the materials, chemicals, and conditions present during normal use and allow products to meet applicable safety certifications and regulatory standards. An alternative that cannot reliably perform under these conditions or maintain regulatory compliance should not be considered a feasible or functionally equivalent substitute.

“Functionally equivalent product” requires clarity. Existing “functionally equivalent products” may result in a functional product, but if it does not meet the performance standards and requirements that these products are required to meet, or cannot be qualified, certified, or otherwise approved in a reasonable time period, it is not functionally equivalent.

Alternatives should require functional equivalency of equal or better protection of safety and performance. Standards such as UL/ASHRAE/ISO/EN, for example, are not discretionary. The substitute must be deployable at scale and the definition should account for lifecycle impacts, including energy

efficiency, the possibility of higher electricity use, greenhouse gas emissions, or reliability issues. A non-PFAS substitute may increase these unintended consequences.

MPCA analysis of “added costs to the end consumer” must also factor in downstream operating costs, system redesign/certification costs, and more in addition to material price. Proposed substitutes often increase energy consumption and cost of ownership. This leads to increased household and small business costs.

One consideration may be to use “alternative” to describe strictly a non-PFAS containing alternate and “viable alternative” as a non-PFAS containing product that meets all needs of end use and maintains functional equivalency in all use cases to the existing PFAS-containing product.

Question 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"?

As written, “reasonably available” has two components: comparable performance and availability in quantity. The rule should also list additional factors to be considered in determining reasonable availability.

When defining the term “reasonably available,” MPCA should consider whether a non-PFAS alternative can maintain performance, durability, and functionality over the expected service life of a product or component. An alternative that performs adequately in limited testing but significantly shortens the intended lifespan should not be considered reasonably available, as it would not result in a functionally equivalent outcome.

MPCA should also consider commercial feasibility and the ability to mass supply products. An alternative should only be considered reasonably available if it can be produced, deployed, and supported at scale while meeting applicable safety, performance, and regulatory standards.

Consideration of lead times for government reviews and/or certifications is critical, particularly in heavily regulated industries where customer and government specifications dictate product design and performance. Often, replacements or substitutions are not permitted without a long lead time for review and approval. As a result, while a non-PFAS alternative may perform a similar function in another product, it may not satisfy the full set of safety, performance, and regulatory requirements applicable to certain sectors such as aerospace, defense, and HVACR equipment. MPCA must therefore recognize that a “reasonably available” alternative must meet all requirements governing these products, not merely functional equivalency.

MPCA is lacking several factors in their definition of reasonable availability. Consumer costs, substitute availability, technological achievability, transportation feasibility, commercial demands, safety, building codes, efficiency standards, and more are examples of what availability truly means. Just because a perceived equal may exist, it may cost more or be logistically unfeasible to transport, mass produce, install, and certify.

Not factoring in cost is shortsighted and will have significant unintended consequences. Evaluating downstream effects is part of a rational interpretation of reasonable availability.

Cost is considered a factor in other jurisdictions. Maine's Section 1614 of Title 38 defines "reasonably available" as follows:

> *A PFAS alternative which is readily available in sufficient quantity and at a comparable cost to the PFAS it is intended to replace and performs as well as or better than PFAS in a specific application of PFAS in a product or product component.*

Question 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.")*

The agency should broadly define product categories at the highest possible level, such as "aircraft", "vehicle", or "HVAC system". Product categories should encompass complete systems as well as their components and replacement parts needed to support safe and reliable operation over a product's service life.

Many complex durable goods are integrated systems composed of numerous components that function together. Making CUU determinations at a narrow or component level would create significant compliance complexity and could disrupt the availability of replacement parts and service support for installed equipment. Broad product categories reduce administrative burden by lessening the amount of CUU applications and help avoid unintended impacts on maintenance, safety, and long-term product reliability.

Proposed language "… that could functionally replace each other for that purpose..." is problematic because there are several similar products that may fit within a product category but are not able to functionally replace each other for their given purpose. Aircraft parts, for example, are designed to fit a specific aircraft. Even if the design and construction of a part may be nearly identical, they are not tested and certified and therefore not functionally able to replace one another.

Question 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?

Applicants should be allowed to submit a CUU determination request covering multiple product categories when a PFAS serves the same functional purpose across different products that are not specifically similar. For example, PFAS used in electronics and circuit boards often perform similar functions across a wide range of products, even though those products are not used interchangeably. Allowing a single CUU determination to apply across multiple product categories would reduce unnecessary regulatory burden and improve efficiency for both MPCA and applicants.

Products should also be allowed to be submitted as categories used in existing federal or other jurisdictional programs. For example, EPA's SNAP program and the Technology Transitions rule. Federal review of substitutes within these categories provides clarity that alternatives have already been approved and vetted. This will reduce regulatory burden and compliance on both the applicant and the

agency. The agency can also access well-known chemical lists from these programs and align their determinations with these programs.

Question 10: What safety or other standards require the use of PFAS in a product?

Many safety, performance, and regulatory standards do not often explicitly require PFAS by name but effectively require their use because PFAS are currently the only materials that enable compliance with those standards. In these cases, PFAS are used to meet critical safety or functional requirements where no non-PFAS alternatives can perform equivalently. Further, listing safety and other standards for the various industries represented by the Chamber is virtually impossible, illustrating the administrative difficulty in accounting for all. Below are a few examples, and many more can be made upon request.

- EPA's SNAP program identifies and evaluates substitutes for ozone-depleting substances and hydrofluorocarbons (HFCs) such as refrigerants and air conditioning. SNAP framework evaluates the overall risk to human health and the environment of existing and new substances, publishes lists of acceptable and unacceptable substitutes, promotes the use of acceptable substitutes, and provides the public with information and potential impact of substitutes. These critical uses have already undergone evaluation and approval by EPA and should exempt for the CUU process.

- Washington State's Safer Products for Washington program established pursuant to RCW 70A.350, PFAS and other chemicals are restricted in certain product categories. When organohalogen flame retardants were prohibited in electronic enclosures, the program allows the use of PTFE as an anti-drip agent. This allowance reflects the technical reality that non halogenated flame retardant systems cannot achieve required flame resistance and anti-drip performance without PFAS. PTFE is therefore necessary to meet applicable fire safety expectations for electronic housings and circuit boards.

- The Radio Technical Commission for Aeronautics (RTCA) DO-160 defines environmental test criteria for airborne equipment and are adopted by regulatory agencies like the FAA and European Union Aviation Safety Agency (AESA).

- MIL-STD-810 is a U.S. DoD environmental test to determine resistance to and suitability for natural and induced environments like shock, vibration, and temperature throughout the service life of military equipment.

- UL 60335-2-8, developed by Underwriters Laboratories (UL) and used in bodies like the U.S. Department of Labor (DoL) Office of Safety and Health Administration (OSHA), U.S. EPA, Canda's CSA Group, International Residential Codes (IRC), is the product standard for commercial refrigeration equipment and ice machines. This standard establishes performance-based requirements—such as flammability limits, refrigerant charge allowances, leak-prevention measures, and material compatibility criteria—needed to safely apply the A2L refrigerant class. At present, only commercially available synthetic refrigerants consistently meet the combination of thermal stability, chemical resistance, and low flammability needed to comply with these requirements without major redesign of equipment or systems. The forthcoming third edition of UL 60335-2-89, along with potential modifications to ASHRAE 15, will further refine how these criteria are applied, especially for field-installed systems. Successful adoption of these

standards—along with aligned building codes and appropriate technician training—will remain strongly dependent on the use of these synthetic ultra-low-GWP refrigerants that are already engineered to satisfy the safety and performance expectations built into the standards.

- UL 60335-2-40 is the harmonized safety standard for air conditioners, heat pumps, and related refrigeration equipment. It establishes refrigerant related safety and performance requirements, including chemical compatibility with modern refrigerants and lubricants, resistance to high pressures and temperature cycling, safety around A2L refrigerants and significant restrictions the use of A3 refrigerants as they are classified as highly flammable. The standard is designed to prevent ignition of hazards, limit potential explosion risks, and ensure safe operation in residential and commercial environments. As a result, A3 refrigerants face strict limitations compared to A1 (non-flammable) and A2L (mildly flammable) refrigerants. Current edition allows maximum 114 grams of R290 for self-contained air conditioning and heat pump system. These limits are based on room volume, leak potential, and ignition risk, and they are set low enough that most common HVAC system sizes (e.g., split air conditioners, heat pumps) cannot practically use A3 refrigerants without exceeding the allowable charge. This effectively prevents A3 refrigerants from being used in the majority of standard comfort-cooling systems.

The above is of course far from a comprehensive list. Further standards in transportation, health, energy, and seemingly infinite other manufacturing sectors all have varying safety standards that inevitably have intentionally added PFAS contributing to the health, safety, and functioning of society. PFAS are not used by choice but because they are currently the only viable means of complying with established standards.

Question 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?**
- **Do you have any alternative recommendations to stagger renewal deadlines?**

Eight years for a CUU is too short. Product redesign, validation, safety testing, and certification cycles for complex durable goods are often lengthy and influenced by regulatory requirements and lifecycle expectations.

Products themselves can span years and lifecycles can span decades. Complex products that are in service for decades require maintenance, repair, and overhaul activities to return them to service in the as-certified configuration for many years after production. Products often cannot be modified without customer and/or regulatory body approval.

More importantly, CUU expiration should be tied to the effective date of the PFAS prohibition rather than the date of CUU issuance. Issuing blanket or category wide CUU determinations could more effectively manage administrative burden.

Further, and as discussed previously, safety certification is not optional with other federal programs. MPCA should identify and exempt critical PFAS uses that have already undergone federal authorization

within existing U.S. regulatory frameworks. An exemption from CUU review or an unlimited CUU duration should apply until the relevant federal program removes the use from eligibility.

Fairness and market stability should be assured to businesses that have completed federal reviews for PFAs-containing products under relevant statutes.

Question 12: The MPCA has developed a preliminary list of potentially eligible data categories that may be considered for trade secret requests. ***(Please review the rule concept document for the list of potentially eligible data)***

- **Do you have any concerns about unintended consequences with this proposal?**
- **Do you have any alternative recommendations for data that should or should not be eligible for trade secret requests?**

"Trade secrets" is narrow. Trade secret information should include categories like intellectual property, national security information, and confidential business information.

Further, Minnesota statutes and rules may not adequately protect or have clarity around what is required. For example, Minn. Rule 7000.1300 requires a written request pursuant to Minn. Stat. 13.37 to classify data as nonpublic. MPCA should explain what is needed in a "written request", describe the appeal process to address denial, and allow a manufacturer to withdraw its request if accompanied with withdrawal from the state's commercial marketplace if denied.

Question 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. For this reason, it is not scientifically appropriate to ascribe a uniform or generalized "cost to society" to the continued use of PFAS as a category. 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.

Any assessment should therefore also consider the societal costs associated with a negative CUU determination for a specific substance and use to avoid the proliferation of unintentional regrettable substitutes. PFAS-free alternatives are likely unsafe now and to be proven safe must undergo years to decades of testing and certification across U.S. and global jurisdictions. 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.

Question 14: For manufacturers: Administrative cost of requesting a CUU determination (Part 1 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.***

If your company currently possesses information regarding intentionally added PFAS (to the CAS number level) for all components in your product lines, please estimate the number of technical staff hours that were required to establish this baseline.

- **Not applicable**
- **Less than 40 hours**
- **40 to 100 hours**
- **101 to 500 hours**
- **More than 500 hours**
- **Other (please specify)**

It is hard to accurately estimate the hours needed across various Chamber members in pre-rulemaking as many CUU details are years out from finalization. For example, level of product required for submission will matter significantly as a "vehicle" will require fewer hours than "SUV", which will require fewer hours than the component or product level, where hours will increase exponentially. Some companies place estimates at around 5,000 hours. One single CUU request is estimated at around 200 hours alone.

Question 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.***

If your company <u>does not</u> possess information regarding intentionally added PFAS (to the CAS number level) for all components in your product lines, please estimate the number of technical staff hours needed to obtain this data from your Tier 2 or 3 suppliers for a single product line.

- **Not applicable**
- **Less than 40 hours**
- **40 to 100 hours**
- **101 to 500 hours**
- **More than 500 hours**
- **Other (please specify)**

While not measured in staff hours, a helpful metric is total cost. The International Material Data System, developed by the automotive industry, has cost $10 billion and counting as maintenance is constant. This is used for compliance with Europe's Substances of Concern in Products (SCIP), which faces an uncertain future due to costs to industry and little benefit to human health or the environment.

Question 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.***

If you have identified a technically viable non-PFAS alternative for one of your products that contains intentionally added PFAS, does implementing this alternative require Capital Expenditure (such as purchasing new molds, retooling machinery) or primarily Operational Expenditure (such as purchasing more expensive raw materials)?

- **Please estimate the ratio of Capital Expenditure to Operational Expenditure (or indicate which category is the dominant cost driver).**

Many companies currently do not have any technically viable non-PFAS alternatives for use. Costs would also include engineering validation, re-qualification, and re-certification of our products across various applications, if viable materials were to exist.

Question 17: For manufacturers: Expenditure considerations when seeking non-PFAS alternatives (Part 2 of 2).

If you <u>have not</u> identified a technically viable non-PFAS alternative for one of your products that contains intentionally added PFAS, have you conducted a Research & Development (R&D) feasibility study?

- **If so, what was the cost of that study?**

Report costs vary widely across Chamber members. However, pursuing non-PFAS alternatives often require substantial upfront feasibility, testing, and redesign expenditures, even prior to material qualifications. A feasibility assessment or early-stage testing program can reach hundreds of thousands to millions of dollars, with even the least intensive redesign or retrofit evaluation. Component or system redesigns incur significant testing, modeling, and validation expenses because proposed substitutes often trigger changes to multiple interdependent parts of the system.

Question 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)?

Does this cycle align with the 5-year renewal period typically associated with regulatory exemptions?

- **If not, please explain the specific technical barriers that would require a longer validation period**

A 5-year renewal period is not sufficient. Research and development, safety validation, qualification, and certification cycles for aerospace and defense products can span into decades. One single validation cycle may be complete in five years, but only accounts for a single component change on a single product. CUUs under Minn. Stat. 116.943 would require a significant increase in changes; meanwhile, regulatory bodies such as the Federal Aviation Administration (FAA) would suffer under the administrative burden of processing the volume of changes required.

Research and development and safety validation cycles for reformulated products—particularly those involving changes to fluorinated materials, refrigerants, engineered polymers, and system often reach **10–30 years** depending on the application. In commercial refrigeration, HVAC, and heat pump sectors,

there are additional multiyear barriers including mandatory alignment with **UL, ASHRAE, ISO, and EN safety standards**, technician training requirements, building code adoption cycles, and the need for component level redesigns and system level requalification before any new chemistry can be placed on the market.

The proposed 5-year renewal period does not align with real world product development cycles. Technical barriers include, but are not limited to:

- Multiple simultaneous interdependent component redesign;
- Mandatory recertification under sector-specific safety standards;
- Multiyear system performance and reliability testing; and
- Risks of higher energy use, reduced efficiency, or safety consequences if substitutions are rushed.

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

One resource available detailing PFAS use in aerospace and defense applications that may help to understand the difficulty of implementing the CUU rules as drafted: https://www.denix.osd.mil/cmrmp/denix-files/sites/14/2025/07/2025-DoD-Update-on-PFAS-Critical-Uses.pdf.

Question 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*

- The proposed rule concept does not sufficiently distinguish PFAS uses in complex durable products such as major appliances and similar equipment from higher exposure consumer products. In many cases, PFAS are present only in internal components that are enclosed within the product and are not accessible to users during normal operation, resulting in limited potential for consumer exposure.

  These products also generally pose a low environmental risk because servicing, handling, and end of life management of PFAS containing components are subject to existing federal regulatory requirements and are typically performed by trained and licensed professionals rather than consumers. Treating all PFAS uses the same, without accounting for differences in exposure potential and risk, may lead to unintended outcomes. MPCA should consider a more risk informed approach, including streamlined CUU determinations for PFAS applications in complex durable products where exposure is limited and established regulatory controls already govern handling and disposal.

- MPCA should allow consolidated CUU submissions by industry associations covering multiple manufacturers when PFAS uses and technical justifications are common across a defined product category. In many cases, manufacturers design products to the same safety, performance, and certification standards, and the functional role of PFAS is materially similar regardless of manufacturer.

Requiring separate, manufacturer specific CUU requests for identical product categories would create unnecessary duplication, increasing administrative burden for both applicants and MPCA without providing additional protection for human health or the environment. Allowing a single CUU submission to be filed on behalf of multiple manufacturers, with participating companies attesting to the accuracy and applicability of the information, would promote consistency, reduce redundancy, and streamline agency review. This approach would improve regulatory efficiency while ensuring appropriate oversight of PFAS uses within shared product categories.

- MPCA should account for the unique role of replacement parts when implementing PFAS restrictions. Manufacturers are often required to support products with replacement parts for many years to meet warranty obligations, safety expectations, and consumer protection requirements. These parts are frequently tied to legacy designs and manufacturing processes that are no longer active.

  Requiring redesign or reformulation of replacement parts long after initial production is often not technically or economically feasible and could jeopardize the ability to repair and maintain products already in service. To avoid unintended disruptions to product functionality and consumer access, MPCA should provide a clear exemption for replacement parts. A defined exemption period, such as 15 years, would align with typical product support timelines and ensure continued availability of necessary parts while maintaining regulatory clarity.

- It appears that CUU applications will require manufacturers to list other "safety or other standards require the use of PFAS in a product". In particular, MN has indicated that an "applicant must provide information on restrictions on the sale or use of PFAS in the same product or product category in other jurisdictions" including non-US countries. It is unduly burdensome to require applicants to identify all national, state and local PFAS laws and regulations that restrict the sale or use of PFAS in the product that is the subject of the CUU.

- Longer periods to correct deficiencies to an incomplete CUU is needed to fully address broad deficiencies, especially given the significance of CUU determinations.

- Clarity around the burden of proof for a rebuttal period is needed. 30 days may be adequate for response to public comments if the requirement to respond to public comments is low.

- MPCA should establish a Technical Advisory Committee, or leverage the existing Rulemaking "check-in" group from industry, along with agency staff, scientists, health professionals, and others with stake in PFAS. Another suggested model is the U.S. EPA's Science Advisory Committee on Chemicals (SACC), which provides independent advice to EPA to assist the agency in implementing the Toxic Substances Control Act.

Questions:

- Has the agency considered consultation with various standards boards and agencies across the nation and world on what standards are necessary for manufacturer compliance?

- Will MPCA factor in consideration of manufacturing sector loss as a result of inability for manufacturers to comply and therefore choosing other jurisdictions to invest and sell products?

- What turnaround times can manufacturers expect for CUUs relating to "novel products"?

- How will the MPCA guarantee CUU reviews are complete prior to the 2032 deadline? The MPCA notes it has no authority to allow sell-through past Jan 1, 2032, but provides no guarantees it will process CUUs for businesses that may be entirely reliant on a positive CUU to continue business.

- What are the evaluation criteria for establishing a complete CUU? There needs to be a more thorough communication of what constitutes a complete report.

- What are the evaluation criteria for receiving a positive CUU determination? There needs to be a clear understanding of what level of justification will be required to substantiate receiving a positive CUU determination. The implications of certain industries not receiving a CUU are enormous in terms of impact to the functioning of society. There should be a clear path to an approval that can be guaranteed given a complete CUU submittal, in order for a company to avoid closing its doors.

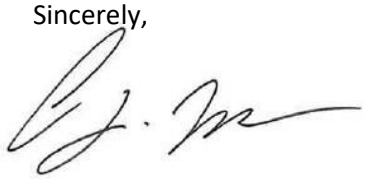
- The essential use definition must not be a barrier to future automotive innovation that can improve safety, reduce emissions, or limit consumer selection. R&D needs stable, transparent and understandable regulation. Any regulation must therefore ensure that the definition of 'essential use' created today applies to, but will not restrict, emerging and future technologies. For example, self-driving or hydrogen power vehicles of the future should not be at a disadvantage compared to currently available models. The definition should also incorporate changing scientific and technological developments and consider availability of substitutes. A holistic approach, which acknowledges the unique properties of technical products and complex objects (including both performance and safety requirements) is needed.

In closing, many products do not have reasonably available or functional equivalent drop-in substitute components. For example, motor vehicle parts are used in widely varying conditions, have a high likelihood of existence during an accident, and have varying system locations. These parts are created with specific, certified fittings to function within the broader product. Giving a CUU for one component within a product but not another will require testing, compliance, and change over possibly decades. That product may then be de facto unavailable for sale in Minnesota, limiting consumer choice and driving up cost.

Predictability of attaining a positive CUU determination will drive business decisions by economic drivers in Minnesota and throughout the world. Industry encourages MPCA to evaluate their rulemaking in not only a local context, but in how manufacturers at all levels of supply chains will factor in CUU determination costs and outcomes when considering participation in Minnesota's economy.

Thank you for the opportunity to provide comment on the MPCA's proposed rule concepts for PFAS in products: Currently unavoidable use (CUU) rulemaking. The Minnesota Chamber of Commerce and its members stand ready and willing to help the MPCA draft a feasible rule.

Sincerely,



Andrew Morley
Director, Environmental Policy
Minnesota Chamber of Commerce
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763-221-7523

March 29, 2026

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

To Who It May Concern:

I write today on behalf of the Minnesota Chamber of Commerce (Chamber), a statewide organization representing more than 6,300 businesses and more than 500,000 employees throughout Minnesota, commenting on the Minnesota Pollution Control Agency's (MPCA) proposed rule concepts for PFAS in products: Currently unavoidable use under Minn. Stat. 116.943.

Chamber comments are organized according to questions prompted by the agency in its SmartComment portal: https://mpca.commentinput.com/?id=fGW4cdeEZ.

Question 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 in the rule concept document prior to answering)*

The current definitions of "essential for health, safety, or functioning of society" in the rule concept document creates a patchwork with similar laws in other jurisdictions, including but not limited to other states and federal laws and state and federal safety requirements and certifications.

As written, the proposed language concept addresses specific categories which creates significant gaps in what qualifies as a CUU. The language as proposed should broaden and simplify significantly, like Maine's definition, or stay specific and add several more paragraphs and subparagraphs with more categories to capture products and components that are truly essential for the health, safety, or functioning of society.

We urge MPCA to harmonize with other enacted laws. Maine's Section 1614 of Title 38 defines *"Essential for Health, Safety or the Functioning of Society"* to mean:

> *Products or product components that if unavailable would result in a significant increase in negative healthcare outcomes, an inability to mitigate significant risks to human health or the environment, or significantly interrupt the daily functions on which society relies. Products or product components that are Essential for Health, Safety or the Functioning of Society include those that are required by federal or state laws and regulations. Essential for the Functioning of Society includes but is not limited to climate*

mitigation, critical infrastructure, delivery of medicine, lifesaving equipment, public transport, and construction.

Should MPCA want to list specific categories in rule language, we urge MPCA then add language to align the definition with /. Federal or state building or environmental codes, regulations, or requirements, along with agencies including, but not limited to, Environmental Protection Agency (EPA) Federal Aviation Administration (FAA), Department of Defense (DoD), National Aeronautics and Space Administration (NASA), Department of Homeland Security (DHS), and Department of Transportation (DOT), and sub-agencies.

Also for consideration in the definition of health, safety, and functioning of society, products that prevent further ozone-depleting substances and greenhouse warming potential gases consistent with EPA Significant New Alternatives Policy (SNAP) program approvals; packaging of a medical device or drug to prevent a product, component, or its packaging from meeting required standards necessary for clinical use; functionalities needed for aeronautics, aerospace, and defense safety; among other provisions.

Question 6: Do you have any recommended changes or other considerations that you think the MPCA should take into account when defining the term "alternative"?

Determining functional equivalency between one product and another is not simply dropping in one and expecting the same outcome. Functionally equivalent alternatives hinge on a number of factors, performance under varying extreme conditions, certification for safe use, compliance, and more. Not simplifying the discussion to simply change a product on a manufacturing floor does not do justice to the work required by manufacturers to allow for product alternatives.

When defining the term “alternative,” MPCA should consider whether a proposed alternative maintains durability over the expected service life of the product. An alternative that performs adequately in short term testing but degrades under real world operating conditions may increase failure rates, safety risks, and lifecycle environmental impacts. If the use of an alternative significantly reduces expected service life, it should not be considered functionally equivalent.

MPCA should also consider compatibility and performance under extreme operating conditions. An alternative must be compatible with the materials, chemicals, and conditions present during normal use and allow products to meet applicable safety certifications and regulatory standards. An alternative that cannot reliably perform under these conditions or maintain regulatory compliance should not be considered a feasible or functionally equivalent substitute.

“Functionally equivalent product” requires clarity. Existing “functionally equivalent products” may result in a functional product, but if it does not meet the performance standards and requirements that these products are required to meet, or cannot be qualified, certified, or otherwise approved in a reasonable time period, it is not functionally equivalent.

Alternatives should require functional equivalency of equal or better protection of safety and performance. Standards such as UL/ASHRAE/ISO/EN, for example, are not discretionary. The substitute must be deployable at scale and the definition should account for lifecycle impacts, including energy

efficiency, the possibility of higher electricity use, greenhouse gas emissions, or reliability issues. A non-PFAS substitute may increase these unintended consequences.

MPCA analysis of “added costs to the end consumer” must also factor in downstream operating costs, system redesign/certification costs, and more in addition to material price. Proposed substitutes often increase energy consumption and cost of ownership. This leads to increased household and small business costs.

One consideration may be to use “alternative” to describe strictly a non-PFAS containing alternate and “viable alternative” as a non-PFAS containing product that meets all needs of end use and maintains functional equivalency in all use cases to the existing PFAS-containing product.

Question 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"?

As written, “reasonably available” has two components: comparable performance and availability in quantity. The rule should also list additional factors to be considered in determining reasonable availability.

When defining the term “reasonably available,” MPCA should consider whether a non-PFAS alternative can maintain performance, durability, and functionality over the expected service life of a product or component. An alternative that performs adequately in limited testing but significantly shortens the intended lifespan should not be considered reasonably available, as it would not result in a functionally equivalent outcome.

MPCA should also consider commercial feasibility and the ability to mass supply products. An alternative should only be considered reasonably available if it can be produced, deployed, and supported at scale while meeting applicable safety, performance, and regulatory standards.

Consideration of lead times for government reviews and/or certifications is critical, particularly in heavily regulated industries where customer and government specifications dictate product design and performance. Often, replacements or substitutions are not permitted without a long lead time for review and approval. As a result, while a non-PFAS alternative may perform a similar function in another product, it may not satisfy the full set of safety, performance, and regulatory requirements applicable to certain sectors such as aerospace, defense, and HVACR equipment. MPCA must therefore recognize that a “reasonably available” alternative must meet all requirements governing these products, not merely functional equivalency.

MPCA is lacking several factors in their definition of reasonable availability. Consumer costs, substitute availability, technological achievability, transportation feasibility, commercial demands, safety, building codes, efficiency standards, and more are examples of what availability truly means. Just because a perceived equal may exist, it may cost more or be logistically unfeasible to transport, mass produce, install, and certify.

Not factoring in cost is shortsighted and will have significant unintended consequences. Evaluating downstream effects is part of a rational interpretation of reasonable availability.

Cost is considered a factor in other jurisdictions. Maine's Section 1614 of Title 38 defines "reasonably available" as follows:

> *A PFAS alternative which is readily available in sufficient quantity and at a comparable cost to the PFAS it is intended to replace and performs as well as or better than PFAS in a specific application of PFAS in a product or product component.*

Question 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.")*

The agency should broadly define product categories at the highest possible level, such as "aircraft", "vehicle", or "HVAC system". Product categories should encompass complete systems as well as their components and replacement parts needed to support safe and reliable operation over a product's service life.

Many complex durable goods are integrated systems composed of numerous components that function together. Making CUU determinations at a narrow or component level would create significant compliance complexity and could disrupt the availability of replacement parts and service support for installed equipment. Broad product categories reduce administrative burden by lessening the amount of CUU applications and help avoid unintended impacts on maintenance, safety, and long-term product reliability.

Proposed language "… that could functionally replace each other for that purpose..." is problematic because there are several similar products that may fit within a product category but are not able to functionally replace each other for their given purpose. Aircraft parts, for example, are designed to fit a specific aircraft. Even if the design and construction of a part may be nearly identical, they are not tested and certified and therefore not functionally able to replace one another.

Question 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?

Applicants should be allowed to submit a CUU determination request covering multiple product categories when a PFAS serves the same functional purpose across different products that are not specifically similar. For example, PFAS used in electronics and circuit boards often perform similar functions across a wide range of products, even though those products are not used interchangeably. Allowing a single CUU determination to apply across multiple product categories would reduce unnecessary regulatory burden and improve efficiency for both MPCA and applicants.

Products should also be allowed to be submitted as categories used in existing federal or other jurisdictional programs. For example, EPA's SNAP program and the Technology Transitions rule. Federal review of substitutes within these categories provides clarity that alternatives have already been approved and vetted. This will reduce regulatory burden and compliance on both the applicant and the

agency. The agency can also access well-known chemical lists from these programs and align their determinations with these programs.

Question 10: What safety or other standards require the use of PFAS in a product?

Many safety, performance, and regulatory standards do not often explicitly require PFAS by name but effectively require their use because PFAS are currently the only materials that enable compliance with those standards. In these cases, PFAS are used to meet critical safety or functional requirements where no non-PFAS alternatives can perform equivalently. Further, listing safety and other standards for the various industries represented by the Chamber is virtually impossible, illustrating the administrative difficulty in accounting for all. Below are a few examples, and many more can be made upon request.

- EPA's SNAP program identifies and evaluates substitutes for ozone-depleting substances and hydrofluorocarbons (HFCs) such as refrigerants and air conditioning. SNAP framework evaluates the overall risk to human health and the environment of existing and new substances, publishes lists of acceptable and unacceptable substitutes, promotes the use of acceptable substitutes, and provides the public with information and potential impact of substitutes. These critical uses have already undergone evaluation and approval by EPA and should exempt for the CUU process.

- Washington State's Safer Products for Washington program established pursuant to RCW 70A.350, PFAS and other chemicals are restricted in certain product categories. When organohalogen flame retardants were prohibited in electronic enclosures, the program allows the use of PTFE as an anti-drip agent. This allowance reflects the technical reality that non halogenated flame retardant systems cannot achieve required flame resistance and anti-drip performance without PFAS. PTFE is therefore necessary to meet applicable fire safety expectations for electronic housings and circuit boards.

- The Radio Technical Commission for Aeronautics (RTCA) DO-160 defines environmental test criteria for airborne equipment and are adopted by regulatory agencies like the FAA and European Union Aviation Safety Agency (AESA).

- MIL-STD-810 is a U.S. DoD environmental test to determine resistance to and suitability for natural and induced environments like shock, vibration, and temperature throughout the service life of military equipment.

- UL 60335-2-8, developed by Underwriters Laboratories (UL) and used in bodies like the U.S. Department of Labor (DoL) Office of Safety and Health Administration (OSHA), U.S. EPA, Canda's CSA Group, International Residential Codes (IRC), is the product standard for commercial refrigeration equipment and ice machines. This standard establishes performance-based requirements—such as flammability limits, refrigerant charge allowances, leak-prevention measures, and material compatibility criteria—needed to safely apply the A2L refrigerant class. At present, only commercially available synthetic refrigerants consistently meet the combination of thermal stability, chemical resistance, and low flammability needed to comply with these requirements without major redesign of equipment or systems. The forthcoming third edition of UL 60335-2-89, along with potential modifications to ASHRAE 15, will further refine how these criteria are applied, especially for field-installed systems. Successful adoption of these

standards—along with aligned building codes and appropriate technician training—will remain strongly dependent on the use of these synthetic ultra-low-GWP refrigerants that are already engineered to satisfy the safety and performance expectations built into the standards.

- UL 60335-2-40 is the harmonized safety standard for air conditioners, heat pumps, and related refrigeration equipment. It establishes refrigerant related safety and performance requirements, including chemical compatibility with modern refrigerants and lubricants, resistance to high pressures and temperature cycling, safety around A2L refrigerants and significant restrictions the use of A3 refrigerants as they are classified as highly flammable. The standard is designed to prevent ignition of hazards, limit potential explosion risks, and ensure safe operation in residential and commercial environments. As a result, A3 refrigerants face strict limitations compared to A1 (non-flammable) and A2L (mildly flammable) refrigerants. Current edition allows maximum 114 grams of R290 for self-contained air conditioning and heat pump system. These limits are based on room volume, leak potential, and ignition risk, and they are set low enough that most common HVAC system sizes (e.g., split air conditioners, heat pumps) cannot practically use A3 refrigerants without exceeding the allowable charge. This effectively prevents A3 refrigerants from being used in the majority of standard comfort-cooling systems.

The above is of course far from a comprehensive list. Further standards in transportation, health, energy, and seemingly infinite other manufacturing sectors all have varying safety standards that inevitably have intentionally added PFAS contributing to the health, safety, and functioning of society. PFAS are not used by choice but because they are currently the only viable means of complying with established standards.

Question 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?**
- **Do you have any alternative recommendations to stagger renewal deadlines?**

Eight years for a CUU is too short. Product redesign, validation, safety testing, and certification cycles for complex durable goods are often lengthy and influenced by regulatory requirements and lifecycle expectations.

Products themselves can span years and lifecycles can span decades. Complex products that are in service for decades require maintenance, repair, and overhaul activities to return them to service in the as-certified configuration for many years after production. Products often cannot be modified without customer and/or regulatory body approval.

More importantly, CUU expiration should be tied to the effective date of the PFAS prohibition rather than the date of CUU issuance. Issuing blanket or category wide CUU determinations could more effectively manage administrative burden.

Further, and as discussed previously, safety certification is not optional with other federal programs. MPCA should identify and exempt critical PFAS uses that have already undergone federal authorization

within existing U.S. regulatory frameworks. An exemption from CUU review or an unlimited CUU duration should apply until the relevant federal program removes the use from eligibility.

Fairness and market stability should be assured to businesses that have completed federal reviews for PFAs-containing products under relevant statutes.

Question 12: The MPCA has developed a preliminary list of potentially eligible data categories that may be considered for trade secret requests. ***(Please review the rule concept document for the list of potentially eligible data)***

- **Do you have any concerns about unintended consequences with this proposal?**
- **Do you have any alternative recommendations for data that should or should not be eligible for trade secret requests?**

"Trade secrets" is narrow. Trade secret information should include categories like intellectual property, national security information, and confidential business information.

Further, Minnesota statutes and rules may not adequately protect or have clarity around what is required. For example, Minn. Rule 7000.1300 requires a written request pursuant to Minn. Stat. 13.37 to classify data as nonpublic. MPCA should explain what is needed in a "written request", describe the appeal process to address denial, and allow a manufacturer to withdraw its request if accompanied with withdrawal from the state's commercial marketplace if denied.

Question 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. For this reason, it is not scientifically appropriate to ascribe a uniform or generalized "cost to society" to the continued use of PFAS as a category. 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.

Any assessment should therefore also consider the societal costs associated with a negative CUU determination for a specific substance and use to avoid the proliferation of unintentional regrettable substitutes. PFAS-free alternatives are likely unsafe now and to be proven safe must undergo years to decades of testing and certification across U.S. and global jurisdictions. 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.

Question 14: For manufacturers: Administrative cost of requesting a CUU determination (Part 1 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.***

If your company currently possesses information regarding intentionally added PFAS (to the CAS number level) for all components in your product lines, please estimate the number of technical staff hours that were required to establish this baseline.

- **Not applicable**
- **Less than 40 hours**
- **40 to 100 hours**
- **101 to 500 hours**
- **More than 500 hours**
- **Other (please specify)**

It is hard to accurately estimate the hours needed across various Chamber members in pre-rulemaking as many CUU details are years out from finalization. For example, level of product required for submission will matter significantly as a "vehicle" will require fewer hours than "SUV", which will require fewer hours than the component or product level, where hours will increase exponentially. Some companies place estimates at around 5,000 hours. One single CUU request is estimated at around 200 hours alone.

Question 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.***

If your company <u>does not</u> possess information regarding intentionally added PFAS (to the CAS number level) for all components in your product lines, please estimate the number of technical staff hours needed to obtain this data from your Tier 2 or 3 suppliers for a single product line.

- **Not applicable**
- **Less than 40 hours**
- **40 to 100 hours**
- **101 to 500 hours**
- **More than 500 hours**
- **Other (please specify)**

While not measured in staff hours, a helpful metric is total cost. The International Material Data System, developed by the automotive industry, has cost $10 billion and counting as maintenance is constant. This is used for compliance with Europe's Substances of Concern in Products (SCIP), which faces an uncertain future due to costs to industry and little benefit to human health or the environment.

Question 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.***

If you have identified a technically viable non-PFAS alternative for one of your products that contains intentionally added PFAS, does implementing this alternative require Capital Expenditure (such as purchasing new molds, retooling machinery) or primarily Operational Expenditure (such as purchasing more expensive raw materials)?

- **Please estimate the ratio of Capital Expenditure to Operational Expenditure (or indicate which category is the dominant cost driver).**

Many companies currently do not have any technically viable non-PFAS alternatives for use. Costs would also include engineering validation, re-qualification, and re-certification of our products across various applications, if viable materials were to exist.

Question 17: For manufacturers: Expenditure considerations when seeking non-PFAS alternatives (Part 2 of 2).

If you <u>have not</u> identified a technically viable non-PFAS alternative for one of your products that contains intentionally added PFAS, have you conducted a Research & Development (R&D) feasibility study?

- **If so, what was the cost of that study?**

Report costs vary widely across Chamber members. However, pursuing non-PFAS alternatives often require substantial upfront feasibility, testing, and redesign expenditures, even prior to material qualifications. A feasibility assessment or early-stage testing program can reach hundreds of thousands to millions of dollars, with even the least intensive redesign or retrofit evaluation. Component or system redesigns incur significant testing, modeling, and validation expenses because proposed substitutes often trigger changes to multiple interdependent parts of the system.

Question 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)?

Does this cycle align with the 5-year renewal period typically associated with regulatory exemptions?

- **If not, please explain the specific technical barriers that would require a longer validation period**

A 5-year renewal period is not sufficient. Research and development, safety validation, qualification, and certification cycles for aerospace and defense products can span into decades. One single validation cycle may be complete in five years, but only accounts for a single component change on a single product. CUUs under Minn. Stat. 116.943 would require a significant increase in changes; meanwhile, regulatory bodies such as the Federal Aviation Administration (FAA) would suffer under the administrative burden of processing the volume of changes required.

Research and development and safety validation cycles for reformulated products—particularly those involving changes to fluorinated materials, refrigerants, engineered polymers, and system often reach **10–30 years** depending on the application. In commercial refrigeration, HVAC, and heat pump sectors,

there are additional multiyear barriers including mandatory alignment with **UL, ASHRAE, ISO, and EN safety standards**, technician training requirements, building code adoption cycles, and the need for component level redesigns and system level requalification before any new chemistry can be placed on the market.

The proposed 5-year renewal period does not align with real world product development cycles. Technical barriers include, but are not limited to:

- Multiple simultaneous interdependent component redesign;
- Mandatory recertification under sector-specific safety standards;
- Multiyear system performance and reliability testing; and
- Risks of higher energy use, reduced efficiency, or safety consequences if substitutions are rushed.

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

One resource available detailing PFAS use in aerospace and defense applications that may help to understand the difficulty of implementing the CUU rules as drafted: https://www.denix.osd.mil/cmrmp/denix-files/sites/14/2025/07/2025-DoD-Update-on-PFAS-Critical-Uses.pdf.

Question 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*

- The proposed rule concept does not sufficiently distinguish PFAS uses in complex durable products such as major appliances and similar equipment from higher exposure consumer products. In many cases, PFAS are present only in internal components that are enclosed within the product and are not accessible to users during normal operation, resulting in limited potential for consumer exposure.

  These products also generally pose a low environmental risk because servicing, handling, and end of life management of PFAS containing components are subject to existing federal regulatory requirements and are typically performed by trained and licensed professionals rather than consumers. Treating all PFAS uses the same, without accounting for differences in exposure potential and risk, may lead to unintended outcomes. MPCA should consider a more risk informed approach, including streamlined CUU determinations for PFAS applications in complex durable products where exposure is limited and established regulatory controls already govern handling and disposal.

- MPCA should allow consolidated CUU submissions by industry associations covering multiple manufacturers when PFAS uses and technical justifications are common across a defined product category. In many cases, manufacturers design products to the same safety, performance, and certification standards, and the functional role of PFAS is materially similar regardless of manufacturer.

Requiring separate, manufacturer specific CUU requests for identical product categories would create unnecessary duplication, increasing administrative burden for both applicants and MPCA without providing additional protection for human health or the environment. Allowing a single CUU submission to be filed on behalf of multiple manufacturers, with participating companies attesting to the accuracy and applicability of the information, would promote consistency, reduce redundancy, and streamline agency review. This approach would improve regulatory efficiency while ensuring appropriate oversight of PFAS uses within shared product categories.

- MPCA should account for the unique role of replacement parts when implementing PFAS restrictions. Manufacturers are often required to support products with replacement parts for many years to meet warranty obligations, safety expectations, and consumer protection requirements. These parts are frequently tied to legacy designs and manufacturing processes that are no longer active.

  Requiring redesign or reformulation of replacement parts long after initial production is often not technically or economically feasible and could jeopardize the ability to repair and maintain products already in service. To avoid unintended disruptions to product functionality and consumer access, MPCA should provide a clear exemption for replacement parts. A defined exemption period, such as 15 years, would align with typical product support timelines and ensure continued availability of necessary parts while maintaining regulatory clarity.

- It appears that CUU applications will require manufacturers to list other "safety or other standards require the use of PFAS in a product". In particular, MN has indicated that an "applicant must provide information on restrictions on the sale or use of PFAS in the same product or product category in other jurisdictions" including non-US countries. It is unduly burdensome to require applicants to identify all national, state and local PFAS laws and regulations that restrict the sale or use of PFAS in the product that is the subject of the CUU.

- Longer periods to correct deficiencies to an incomplete CUU is needed to fully address broad deficiencies, especially given the significance of CUU determinations.

- Clarity around the burden of proof for a rebuttal period is needed. 30 days may be adequate for response to public comments if the requirement to respond to public comments is low.

- MPCA should establish a Technical Advisory Committee, or leverage the existing Rulemaking "check-in" group from industry, along with agency staff, scientists, health professionals, and others with stake in PFAS. Another suggested model is the U.S. EPA's Science Advisory Committee on Chemicals (SACC), which provides independent advice to EPA to assist the agency in implementing the Toxic Substances Control Act.

Questions:

- Has the agency considered consultation with various standards boards and agencies across the nation and world on what standards are necessary for manufacturer compliance?

- Will MPCA factor in consideration of manufacturing sector loss as a result of inability for manufacturers to comply and therefore choosing other jurisdictions to invest and sell products?

- What turnaround times can manufacturers expect for CUUs relating to "novel products"?

- How will the MPCA guarantee CUU reviews are complete prior to the 2032 deadline? The MPCA notes it has no authority to allow sell-through past Jan 1, 2032, but provides no guarantees it will process CUUs for businesses that may be entirely reliant on a positive CUU to continue business.

- What are the evaluation criteria for establishing a complete CUU? There needs to be a more thorough communication of what constitutes a complete report.

- What are the evaluation criteria for receiving a positive CUU determination? There needs to be a clear understanding of what level of justification will be required to substantiate receiving a positive CUU determination. The implications of certain industries not receiving a CUU are enormous in terms of impact to the functioning of society. There should be a clear path to an approval that can be guaranteed given a complete CUU submittal, in order for a company to avoid closing its doors.

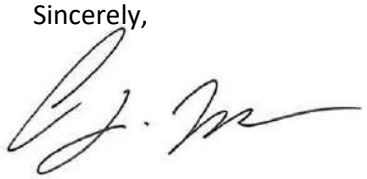
- The essential use definition must not be a barrier to future automotive innovation that can improve safety, reduce emissions, or limit consumer selection. R&D needs stable, transparent and understandable regulation. Any regulation must therefore ensure that the definition of 'essential use' created today applies to, but will not restrict, emerging and future technologies. For example, self-driving or hydrogen power vehicles of the future should not be at a disadvantage compared to currently available models. The definition should also incorporate changing scientific and technological developments and consider availability of substitutes. A holistic approach, which acknowledges the unique properties of technical products and complex objects (including both performance and safety requirements) is needed.

In closing, many products do not have reasonably available or functional equivalent drop-in substitute components. For example, motor vehicle parts are used in widely varying conditions, have a high likelihood of existence during an accident, and have varying system locations. These parts are created with specific, certified fittings to function within the broader product. Giving a CUU for one component within a product but not another will require testing, compliance, and change over possibly decades. That product may then be de facto unavailable for sale in Minnesota, limiting consumer choice and driving up cost.

Predictability of attaining a positive CUU determination will drive business decisions by economic drivers in Minnesota and throughout the world. Industry encourages MPCA to evaluate their rulemaking in not only a local context, but in how manufacturers at all levels of supply chains will factor in CUU determination costs and outcomes when considering participation in Minnesota's economy.

Thank you for the opportunity to provide comment on the MPCA's proposed rule concepts for PFAS in products: Currently unavoidable use (CUU) rulemaking. The Minnesota Chamber of Commerce and its members stand ready and willing to help the MPCA draft a feasible rule.

Sincerely,



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