September 2, 2025

Submitted via Electronic Mail

Maine Department of Environmental Protection
Attn: Kerri Malinowski Farris
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RE: Flow Control Coalition Comments on Maine DEP Proposed Amendments to *Chapter 90: Products Containing Perfluoroalkyl and Polyfluoroalkyl Substances*

Dear Maine Department of Environmental Protection:

On behalf of the Fluid Sealing Association,[1] Hydraulic Institute,[2] and the Valve Manufacturers Association[3] (collectively, the "Flow Control Coalition"), we respectfully submit the following comments regarding Maine Department of Environmental Protection ("MDEP") proposed amendments to the Chapter 90 regulations governing "Products Containing Perfluoroalkyl and Polyfluoroalkyl Substances" ("PFAS"). While the MDEP has specifically requested comment on the proposed listing of two product categories as currently unavoidable uses ("CUUs") of

[1] Founded in 1933, the FLUID SEALING ASSOCIATION® (FSA) is an international trade association. Member companies are involved in the production and marketing of a wide range of fluid sealing devices primarily targeted to the industrial market. The Fluid Sealing Association membership includes a number of companies in Europe and Central and South America, but is most heavily concentrated in North America. Fluid Sealing Association members account for a majority of the manufacturing capacity for fluid sealing and containment devices in the Americas market

[2] Founded in 1917, the Hydraulic Institute spent much of the past century playing a leading role in development and implementation of pump standards on behalf of manufacturers, system engineers and end-users. As the nationally and internationally recognized representative of the US pump industry, the Hydraulic Institute works with rulemaking bodies such as the US Department of Energy (DOE) as well as standards setting organizations such as ISO, API, AWWA, *etc.*

[3] Founded in 1938, the Valve Manufacturers Association of America is the only North American trade association that represents the interests of manufacturers, suppliers and distributors of valves, actuators, and controls. VMA's mission is to serve the growth and innovation of the U.S. and Canadian industrial valve industry globally by providing the forum which enhances a positive business operating environment, increases knowledge and education, advances technology innovations, and facilitates business and government connections.

intentionally added PFAS, the Flow Control Coalition urges the Department to consider the following input concerning the CUU application details and process.

The Flow Control Coalition represents industrial industries that are vibrant, innovative and responsible. The member companies of the Coalition play an integral role in supporting the production of products essential to improving the quality of daily life of the public and protecting the planet. Industrial flow control equipment is relied on in many industries, most notably power generation (traditional and new energy sources); national defense; construction including shipbuilding and data centers; semi-conductor production; mining; pharmaceutical; pulp and paper; water and wastewater; oil and gas; chemical; transportation; food and beverage and many others.

When present in the products manufactured by our member companies, PFAS substances – especially fluoroelastomers and fluoropolymers - are used due to their unique properties that provide for effective sealing, create barriers for emissions, reduce energy use, and enhance performance in highly corrosive or high temperature environments. Fluoroelastomers and fluoropolymers provide highly reliable performance which is particularly important when access to the production system is difficult and dangerous, and they provide a safe and reliable production process.

Additionally, fluoroelastomers and fluoropolymers allow products to meet detailed specifications required by accepted standards and regulations designed to protect health, safety, the environment, and efficient operations – of paramount importance when failure of these products could result in catastrophic consequences.

For the reasons detailed below, as well as in the proposed CUU for flow control equipment submitted to MDEP by the Coalition on March 1, 2024, we urge the Department to consider the complexity of certain industrial product categories, such as pumps, seals, valves, fittings and other critical controls in a wide variety of industrial applications where continuous performance is essential and failure can be catastrophic. These types of industrial products do not result in potential exposure to PFAS by consumers or the public. Moreover, PFAS are not present in these types of industrial controls for aesthetic reasons or consumer convenience (as is the case with a variety of consumer products for which PFAS often are used to impart characteristics such as water-, heat-, or stain-resistance). Rather, for critical flow control systems, PFAS are essential for health and safety reasons, and necessary to enable the functioning of critical industrial operations.[4]

[4] High molecular weight fluoroelastomers and fluoropolymers (e.g., PTFE, FKM, FFKM, ePTFE, PCTFE, mPTFE, PFA, eTFE, FEP, PVDF, PFPE, FEPM, and ECTFE) are used in the manufacture of gaskets, seals, pumps, coatings, chemical piping and industrial valves, all of which are integral to the production of products core to maintaining modern life. These solid, molded products have negligible potential for worker or consumer exposure or other safety concerns while handling the product. The use of these fluoropolymers enables production of a wide range of everyday products used by almost every American, including semiconductors, cell phones, food and beverages, pharmaceuticals, renewable energy systems, transportation, pulp and paper products, and more. They are also integral in the technology used in efforts to achieve zero carbon goals and in the production, transportation, and storage of hydrogen.

Certain Fluoropolymers are Essential for Many Critical Applications

Where PFAS-containing equipment is specified for use, it is typically to provide one or more of the following performance characteristics:

- Chemical stability over a wide acidity-alkalinity range, aggressive liquids (*e.g.*, chlorine, chlorine dioxide, hypochlorite).

- Effective sealing, especially important when hazardous materials are being processed or when leakage would be detrimental to the environment, and to the health of safety of workers and communities.

- Corrosion resistance - making them chemically and thermally stable, non-reactive to acids, bases, and solvents, and ideal for use in industrial applications.

- Friction reduction - widely used in industrial settings for their ultra-low friction properties, which help reduce wear, energy loss, and maintenance..

- Longevity – in high wear situations or difficult to replace situations like the inner working parts or in hard to reach areas (remote areas, underground areas, etc.) ..

- Temperature resistance, especially in extreme temperature environments – to help resist thermal degradation and maintain chemical integrity at both extreme high and low temperatures. -

- Increased abrasion resistance - used in seals, gaskets, linings, coatings, and mechanical components across industries such as aerospace, automotive, electronics, and chemical processing due to their ability to resist wear, abrasion, and surface degradation—even under high pressure, temperature, and corrosive conditions

- High temperatures over a long period of time - maintain chemical integrity, mechanical strength, and surface properties under continuous high-temperature conditions.

- Anti-galling - galling is a form of adhesive wear that occurs when metal surfaces slide against each other under pressure, leading to material transfer and surface damage.

- Insulating properties, temperature resistance, good mechanical resistance - making them suitable for aerospace, electronics, chemical processing, and medical applications.

- Hygienic Suitability - their chemical stability, resistance to heat and corrosion, and low surface energy, which make them ideal for hygienic environments.

- Gas permeability - Fluoropolymers exhibit extremely low gas permeability due to their dense molecular structure and strong carbon-fluorine bonds, enabling long-term gas

containment and stability in applications such as fuel lines, gaskets, seals, and medical devices

- Diffusion coefficient - the diffusion coefficients of PFAS for gases are typically in the range of 10^{-12} to 10^{-10} m^2/s, depending on the specific compound, polymer structure, and environmental conditions. These values are significantly lower than those of many other polymers, contributing to PFAS's effectiveness in gas containment and insulation.

- Moisture resistant - highly hydrophobic and chemically inert, making them ideal for moisture-resistant applications such as seals, gaskets, coatings, membranes, and insulation in sectors like aerospace, automotive, electronics, and defense

- Resistant to UV-irradiation of high dose and over time - resist photolytic breakdown due to their strong carbon-fluorine bonds and dense molecular structure, which prevent UV-induced chain scission and maintain mechanical and chemical integrity over time—even under intense UV-C irradiation.

- Required to achieve UL/CSA flammability testing requirements for anti-drip properties in certain plastic formulations

- Dielectric Strength - Fluoropolymers exhibit high dielectric strength, low dielectric constants, and minimal dissipation factors—making them suitable for wire insulation, cable jacketing, and components in high-voltage, high-frequency, and high-temperature applications.

- High purity oxygen applications - including medical devices, aerospace components, and chemical processing—because they resist oxidation, maintain integrity at elevated temperatures, and do not release particulates or reactive byproducts that could compromise oxygen purity.

The decision to use PFAS substances in these applications is the product of highly complex and costly engineering determinations, and using PFAS substances can be costly. In the flow control industry, highly skilled engineers work to design the entire flow control system to meet detailed specifications required by accepted standards and regulations designed to protect health, safety, the environment, and efficient operations.

Simply put, if there were reasonably available alternatives that delivered the same level of performance in these critical applications, they would be used. In fact, given the cost of PFAS chemicals, the industry would welcome effective alternatives. Unfortunately, such alternatives are not available at this time for the critical applications our industry serves.

Given this background, and the complexity of the regulatory and standard-setting regime that governs industrial flow control products, we urge MDEP to recognize these realities when evaluating future CUU applications for such products in advance of the 2032 PFAS ban deadline. Further, to ease the burden on both MDEP and companies that provide flow control systems for industrial applications in Maine, the Department should adopt a broad CUU exemption for

industrial flow control products. The Flow Control Coalition would be happy to discuss the scope of such an exemption with MDEP, and provide appropriate information to support such a determination.

Regarding the existing application process, the Coalition has the following input on how the requirements are overly complex and unnecessarily burdensome when applied to industrial flow control products.

(1) Complex industrial flow control systems should be considered as a single product category rather than requiring each individual system to obtain a separate CUU determination

Fluid handling or flow control is a complex process that requires numerous components including but not limited to industrial pumps, motors, drives, pipes, seals, gaskets, coatings, piping, and valves. These components work in unison to handle a variety of fluids each with different characteristics and in a variety of situations or use cases. Often, these systems are unique to individual (or a limited number) of industrial uses for which they are specifically designed. Accordingly, it is highly impractical, if not impossible, to submit CUU applications for each type of system or the wide array of components by so many different industries.

The Flow Control Coalition has prepared a list of critical products that contain PFAS that are commonly used to handle difficult materials in specific environments and situations, as attached to our March 1, 2024, CUU proposal for flow control equipment. The list includes the relevant Global Product Classification ("GPC")/Harmonized Tariff System ("HTS") product category codes, in addition to providing information on the reason for using PFAS in the product.

The Coalition requests that, for complex industrial flow control products, the MDEP consider CUU applications that cover all products in specified GPC/HTS product category codes, rather than requiring individual applications. Absent such a categorical approach, it will be impossible to apply for CUU determinations for the highly specific industrial flow control systems that will be needed by a wide variety of industrial producers in Maine, particularly given that the performance requirements for future systems are not knowable at this time.

(2) Complex and individualized industrial flow control systems are not amenable to the required essentiality and alternatives analyses

Similarly, it is not practical to submit an analysis of the essentiality of PFAS alternatives for specific industrial flow control systems, which, as noted above, are designed to meet individualized performance requirements depending on the manufacturing process and substances involved. Again, the decision to use PFAS substances in these applications is the result of specialized engineering determinations as to how best to meet detailed specifications required to meet performance and safety standards, as well as applicable health and environmental regulations. That process necessarily entails evaluation of available alternatives, including for PFAS-containing components. Given the cost of PFAS chemicals, if effective alternatives are available that do not compromise system performance or safety, then non-PFAS options would be used.

Also, evaluation of alternative materials in this industry sector requires extensive testing (*e.g.,* performance, stability and quality) and obtaining certifications from or adoption by the appropriate regulatory or standard-setting bodies. This is a drawn-out, time-consuming process, and it is difficult to estimate the number of years that it would take to find viable alternatives to current PFAS uses. Obviously, this type of process is not conducive to the more straightforward (though still burdensome) alternatives analysis that is envisioned for consumer products.

MDEP should not place itself in the position of second-guessing the engineering determinations made for industrial flow control technologies. The Flow Control Coalition can provide MDEP further details on the specifications and requirements that industrial flow control systems are required to meet.

Likewise, there are a wide variety of potential regulatory requirements or industry standards that must be met by industrial flow control systems. These requirement will vary depending on the specific use application, and are not reasonably knowable in advance for systems that are individualized or of limited applicability. The Coalition notes that examples of relevant standard setting organizations for the fluid handling and flow control industry include API, ASME or ANSI/HI, as well as others. Additionally, major electrical components and sub-components are also subject to testing and labeling requirements from UL. Numerous environmental and safety standards also apply (as listed in our March 1, 2024, submission). For each of these standards, the use of PFAS has been determined, after extensive engineering analysis, to be necessary to achieve the required performance and safety specifications.

(3) MDEP must consider and maintain the confidentiality of sensitive business information in making CUU determinations

The Coalition is concerned that the Chapter 90 regulations (Section 9.A) specify that "should a proposal for a currently unavoidable use determination contain claims of confidentiality, the Department may determine that there is insufficient publicly available information to justify a rulemaking." This is not conducive to a fair evaluation of complex industrial flow systems that are designed for critical and often highly sensitive industrial applications. Proposals for CUU determinations for industrial flow control products are likely to require discussion of information – including engineering designs, analysis of critical failure potential (and the need for PFAS-containing components to avoid such failure), etc. – that can divulge not only proprietary business data but also details that are appropriately protected from disclosure for safety reasons.

This scenario points to another reason as to why MDEP should adopt a general CUU determination for the industrial flow control sector.

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The Flow Control Coalition appreciates the opportunity to submit the foregoing comments. For further information or to discuss these comments, please contact:

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Respectfully,
/s/
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