PFAS Regulations Report From the Fluid Sealing Association

Members address lawmakers who are considering banning use of this class of chemicals that are used in fluid sealing products.

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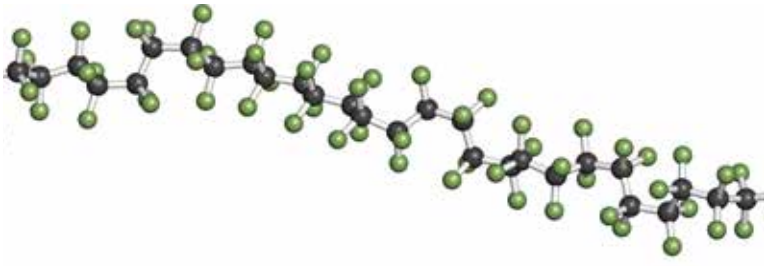

Chemicals called per-and polyfluoroalkyl substances (PFAS) are a class of chemicals that some are recommending should be banned from use in the United States and the European Union. Some information seen in the media can be hyperbolic. While some chemicals classified as PFAS are an environmental concern, many are considered safe materials. The Fluid Sealing Association (FSA) is actively trying to communicate concrete, fact-based knowledge about this subject to counter arguments with a focus on one of these chemicals—polytetrafluoroethylene or PTFE.

What Are PFAS?

PFAS are a group of chemicals used to make, among other things, fluoropolymer coatings and products that resist heat, oil, stains, grease and water. There are more than 9,000 known, different chemicals that fit under the umbrella of PFAS. Fluoropolymer coatings can be in a variety of products including clothing, furniture, adhesives, food packaging and heat-resistant nonstick cooking surfaces. FSA's main concern is the use of certain PFAS compounds in sealing products such as valve packing, pump packing, gasketing and O-rings in mechanical seals and expansion joints.

A good analogy of these chemicals can be comparing all the different types of cats in the world. Imagine 9,000-plus felines frolicking in a field. A lion and a tiger tussle at one end. A pair of kittens unravel yarn at the other. In between, there are 8,996 leopards, pumas, jaguars, lynx, panthers and house cats. Now imagine 9,000-plus PFAS—per- and polyfluoroalkyl substances—polymers and nonpolymers spread across that same field. Some are large molecules. Others are small. Some are bioavailable; some are not. All are PFAS, but just as the felines come in all shapes, sizes and ferocity, so do PFAS.

All PFAS chemicals are not equal and should not be regulated as such. Each should be treated according to the application and toxicity. Umbrella legislation or regulation against all PFAS could end the use of nonharmful PTFE—a protector of people, the environment and industrial equipment. According to the Organization of Economic Cooperation and Development (OECD), "PFAS are a chemical class with diverse molecular structures and physical, chemical and biological properties. It is highly recommended that such diversity be properly recognized and communicated in a clear, specific and descriptive manner. The term "PFAS" is a broad, general, nonspecific term, which does not inform whether a compound is harmful or not but only communicates that the compounds under this term share the same trait for having a fully fluorinated methyl or methylene carbon moiety."

Why Is PTFE Important?

PTFE polymers in their finished form are corrosion resistant, save energy, increase safety and allow easy movement of machine elements. In many applications, there is no known substitute for PTFE. No other material has the chemical resistance, low frictional characteristics, thermal stability and effective sealing capability. These products are used in infrastructure, aerospace, military, power generation, chemical processing, food, computer chips and pharmaceutical industries. Fluid sealing products, including those with PTFE, serve an essential role. They improve energy savings, reduce emissions and improve safety and equipment reliability. A good example is how PTFE is a key component to the massive improvements of emissions valve sealing technology over the last 30 years. This has created a large drop in methane and other greenhouse gases from leaking equipment.

PTFE materials are "generally regarded as safe" by the FDA and are approved for implantation and various medical devices per United States Pharmacopeia (USP) Class VI designation. In sealing products, PTFE prevents leakage from industrial equipment. Leaks from these assets contribute to greenhouse gas emissions in some applications and create significant safety hazards in others. Seals that utilize PTFE polymers reduce leakage rates to almost zero, making them a cornerstone in the effort to decrease fugitive emissions, battle climate change and protect workers. In many applications, the unique properties of PTFE mean there is not an acceptable alternative solution.

High molecular weight fluoropolymers, like PTFE, are highly stable and too large to be bioavailable. PTFE is nontoxic and not mobile in the environment. OECD created criteria for "Polymers of Low Concern." Many fluoropolymers, including PTFE, when evaluated by the OECD met all the criteria for a "Polymer of Low Concern" as their properties present low health and environmental hazards. PTFE and other high

FSA Recommendations for Legislation of PFAS

The Fluid Sealing Association recommends lawmakers:

- **Seek a science-based approach to regulating harmful PFAS chemicals, such as PFOA and PFOS.**
- **Base regulations on standardized test methods and acceptance limits of materials deemed harmful by the EPA.**
- **Continue mitigation efforts, including groundwater cleanup and funding to remove harmful chemicals.**

The FSA is proposing language in state and federal legislation that would "carve out" PTFE for industry use similar to language for using PTFE in medical usage. This will ensure the industry can continue to use current PTFE technology.

molecular weight fluoropolymers are different from the PFAS found in water resources. The difference is evident from objective data on their properties, the biologically sensitive applications where they have been extensively used and studied for decades (e.g., medical devices and pharmaceutical processing) and their absence from environmental media.

The FSA promotes a targeted approach to regulating hazardous chemicals. It opposes regulatory overreach and a one-size-fits-all approach to PFAS chemicals, which would include safe PTFE and other fluoropolymers. This could lead to unintended consequences to the climate, economy and safety.

PFAS Chemicals of Concern

PFAS chemicals of concern include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). These should be regulated to avoid entering drinking water and the environment. However, thousands of other chemicals that do not have these detrimental characteristics should not be grouped into one sweeping regulation or legislative action that may exclude or restrict safe materials that benefit safety and the environment. Major PTFE manufacturers have removed the use of PFOA from PTFE production processes entirely, eliminating risk and the use of hazardous materials. ■

FLUIDSEALING ASSOCIATION

We invite your suggestions for article topics as well as questions on sealing issues so we can better respond to the needs of the industry. Please direct your suggestions and questions to sealingsensequestions@fluidsealing.com.

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