

FLUOROTECHNOLOGY – THE DIVERSE FAMILY OF PFAS CHEMISTRY

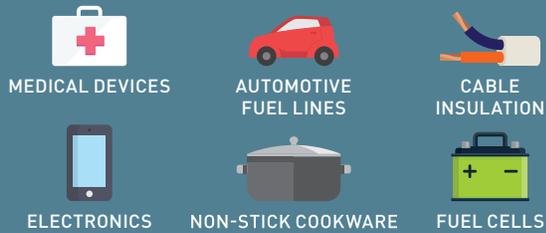
Per- and polyfluoroalkyl substances (PFASs) make up a family of chemistry encompassing a broad range of chemicals and products with widely varying physical and chemical properties, health and environmental profiles, uses and benefits. Because of this diversity, it is inaccurate to associate safety concerns that have been raised regarding a few PFASs with most other PFASs. By some estimates, over 3,000 substances could be classified as PFASs based on their chemical structures, but only a fraction of those PFASs have any commercial use today. These PFASs provide distinct properties enabling numerous applications that are critical to modern life. Two important types of PFASs are fluoropolymers and fluorotelomer-based products.

FLUOROPOLYMERS

Fluoropolymers provide important properties, such as heat and chemical resistance, nonstick, and unique electrical insulating properties. Because of their physical characteristics, these materials present no significant risk to human health or the environment. Historically, some fluoropolymers were manufactured using a production aid known as perfluorooctanoic acid (PFOA), a perfluoroalkyl acid associated with potential safety concerns and environmental contamination. Major manufacturers in the U.S., Europe, and Japan are no longer using PFOA to produce fluoropolymers and have moved to alternative production aids.

EXAMPLE USES OF FLUOROPOLYMERS

Providing high performance in demanding environments



OLDER FLUOROTELOMERS (LONG-CHAINS)

PFAS manufacturers in the U.S., Europe, and Japan have globally phased out older (long-chain) fluorotelomer-based products because of their potential to degrade to form long-chain perfluoroalkyl acids like PFOA. While some manufacturers in other parts of the world continue to manufacture and use these older chemicals, the FluoroCouncil has supported regulatory action to transition away from long-chains toward use of today's more sustainable PFASs.



FLUOROTELOMER-BASED PRODUCTS

Fluorotelomer-based products are used to provide water, oil and stain repellency in textiles, carpet and paper. They are also used in applications such as fire-fighting foams and coatings additives. These products are widely understood not to present toxicity concerns when used as intended. However, some may degrade to form perfluoroalkyl acids. Major manufacturers are now producing fluorotelomers based on newer, short-chain technology that cannot break down to PFOA.

TODAY'S FLUOROTELOMERS (SHORT-CHAINS)

With the phase out of older (long-chain) fluorotelomer-based products, many PFAS manufacturers and downstream users have transitioned their manufacture to short-chain fluorotelomer-based products. These products provide comparable performance properties as the older products, but with improved environmental and human health profiles. They also cannot degrade to form PFOA.

EXAMPLE USES OF TODAY'S FLUOROTELOMER-BASED PRODUCTS

Enhancing products' protective properties



MEDICAL GARMENTS



FIRST RESPONDER GEAR



CARPET



CLASS B FIRE FIGHTING FOAM



FOOD PACKAGING



OUTDOOR PERFORMANCE APPAREL



UPHOLSTERY



PAINTS/COATINGS

STUDY AND REGULATORY OVERSIGHT

Regulators globally have held manufacturers of short-chain fluorotelomer-based products to high standards to ensure the safety of these products is well understood. As a result, these products are supported by a robust body of data.

Authorities have determined that today's products meet relevant regulatory standards for the protection of human health and the environment. In addition, the use of best environmental practices helps to minimize waste, exposure and environmental releases of these short-chain substances. More information on the studies supporting these substances and available best practices is available on the FluoroCouncil website at www.fluorocouncil.org.

