SPOTLIGHT ON POLYFLUORINATED AND PERFLUORINATED COMPOUNDS

Polyfluorinated and Perfluorinated Compounds — usually referred to as PFAS — consist of a group of more than 4,700 chemical substances used for their oil-, stick- or stain-repellent properties in the manufacturing of a large array of products and applications [1]. The first commercially important PFAS compound, Teflon, became famous through its widespread use in cookware. Similar compounds are now used in an endless array of products—in greaseproof food packaging like pizza boxes and microwave popcorn bags; in stain-resistant textiles including carpets; in water-repellent outdoor apparel; and in firefighting foams [2].

PFAS are extremely stable, and last indefinitely in the environment without breaking down. They are carried very long distances by water and wind, and today they can be found in the blood of almost everyone in the world. Some scientists have suggested the high concentrations of PFAS found among the Inuit in northern Canada and Greenland may be responsible for the high levels of breast cancer in those populations. Additionally, scientists have linked the most infamous substance of the family to date—PFOA—to numerous health effects, including kidney and testicular cancer, elevated cholesterol, decreased fertility, low birth weight, thyroid problems and decreased immune response to vaccines in children [3] [4].

PFOA and its analogue PFOS have recently been banned under the Stockholm Convention, leading to an explosion of very similar substances used as replacements. Manufacturers have responded with the “GenX” technology, a suite of substances which are polyfluorinated and structurally similar to the banned compounds. The most important of these, HPFO-DA, was recently listed as substance of very high concern at the European level [5] and has already been found to contaminate water in communities in Italy, the Netherlands, and the United States [6]. This once again demonstrates the critical importance of regulating these compounds as a group, rather than trying to address them one by one.