

Abstract

Per- and polyfluoroalkyl substances (PFAS) are anthropogenic organic substances widely used in the industrial production of a wide range of products, including everyday products. They are released into the environment both from these items and from the production process itself. The persistence, mobility and bioaccumulation capacity of these substances leads to increasing concentrations in the biota - including agricultural crops. Crops are one of the sources of PFAS to the human body, in which they have been shown to be toxic and carcinogenic. This paper summarizes the biotic and abiotic factors affecting the accumulation of PFAS in crops. It also investigates whether these factors stimulate or inhibit bioaccumulation. On the basis of this search, the important biotic factors that promote accumulation include larger root area, higher transpiration rate of the plant, small leaf size, absence of the Casparian strip and higher protein richness of the crop. The structure of PFAS determining the properties of these pollutants and the presence of soil sorbents turned out to be key abiotic factors affecting PFAS mobility and concentrations in crops. This work also highlights the limited knowledge regarding certain factors, such as the ability of different aluminium or iron oxides and hydroxides to bind the mentioned pollutants.

Key words: pollutant, PFAS, PFOS, PFOA, bioaccumulation, factor, crop