Perfluoroalkyl substances are a group of chemicals which have been manufactured since 1950. PFASs possess excellent oil- and water-repellent properties and are used in clothing, food contact materials, firefighting foams, carpets and cosmetics. They are widely distributed, degradation resistant, bioaccumulative, able to be transported through the air, and toxic to humans and wildlife.

Data are proving the negative impact of PFASs on children, including their weakening of the humoral immune response to vaccinations. These substances are also related to developmental toxicity and thyroid disorders. The International Agency for Research on Cancer has classified PFOA as a human carcinogen and PFOS as a probable human carcinogen.

To protect the environment and human health, in 2019 and 2020 the European Union prohibited the use and manufacture of PFOS, PFOA, and their salts.

According to the European Food Safety Authority (EFSA) scientific opinion from 2020, the intake of contaminated foods and water is a key source of human exposure to PFAS

Water absorption by food during cooking is a key process. This process involves water passing through the cell walls or surfaces of food as it is immersed in boiling water. Polluted water that penetrates food can transfer PFAS, causing contamination of cooked food. The lack of knowledge regarding the transfer of PFAS from contaminated water, at levels typically found in European countries, to food cooked in this water, highlights the need for research to address this knowledge gap.

In the framework of the project it is planned to contaminate water at four different levels representing various exposure scenarios, and to use it for cooking various food including meat (pork, beef, chicken, turkey), vegetables (potatoes, carrots, parsley root, beetroot, beans, broccoli, cauliflower) and cereal products (pasta, rice and, buckwheat groats). Three cooking time will be applied for all food types (sliced and not sliced). The food will be assessed if it is compliant with the maximum levels (2023/915). The risk to consumers will be assessed based on various consumption scenarios.

The outcomes of the project could influence drinking water standards, and food safety guidelines by expanding the definition of exposure pathways considered in PFAS regulation.

The research provides results that are directly applicable to public health policies, consumer behavior and risk communication strategies, using typical household cooking methods and common foods.

Given the growing interest of the European Union in addressing population exposure to PFAS, the project is closely aligned with the EU's current research and policy priorities.