

Recent literature reports show that numerous organic micropollutants are identified in the swimming pool water, including pharmaceuticals and cosmetics ingredients. Many of them are biologically active, causing the danger of hormonal imbalance in human organisms as a result of long-term exposure even to their low concentrations. Some of them are carcinogenic and mutagenic. Degradation and transformation of these compounds in the water treatment system may result in the formation of even more toxic by-products than their parent compounds. Closed-circuit systems of swimming pool installations cause accumulation of both micropollutants introduced directly into the swimming pool basin and products of their decomposition. Micropollutants co-existing in the swimming pool water may interact with one another, causing negative health effects. The presence of these compounds and the possibility of their accumulation in swimming pool installations raise questions about the potential health hazard to swimming pool users.

The main goal of this project is to identify sources and transformations, including degradation micropollutants in the swimming pool water environment. The project contains innovative elements and assumes carrying out, to a large extent, experimental research on the occurrence of anthropogenic organic micro-pollutants in the pool water environment. The project involves experimental research in a wide range regarding the occurrence of anthropogenic organic micropollutants in the pool water environment.

Paths of transformation of small-molecule organic micro-pollutants in swimming pool water treatment systems will be determined. It will enable the understanding of physical changes and chemical reactions of various compounds that may occur in these specific systems. The sources of organic micro-pollutants in the pool water environment will be determined. An assessment of the health risk of bathers in swimming pools resulting from exposure to organic micropollutants in the water as well as toxicity and mutagenicity tests of swimming pool water will be carried out. The mechanism and efficiency of removing selected micropollutants in classical and modern swimming pool water treatment systems will also be determined. The use of innovative water treatment techniques may allow to improve the quality of swimming pool water and reduce the health risk of swimmers caused by exposure to biologically active micropollutants. In order to guarantee the safety and comfort of swimming pool users in the future, it may be necessary to apply new or additional pool water treatment processes in the aspect of effective elimination of organic micropollutants.