SUMMARY

Identification of Micropolymers in Gray water

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Microplastics, which are tiny plastic particles, have become a topic of great interest for both scientists and the public due to their status as emerging particulate anthropogenic pollutants that can be found all over the world, including in food and drinking water. To better understand their presence in the environment, it is crucial to monitor microplastics, which involves using multiple methodological approaches to extract, identify, and quantify the particles dispersed in environmental matrices. However, when dealing with environmental matrices that are high in organic matter, chemical digestion treatment is required to get rid of microplastics and release the particles. This type of treatment involves using a range of chemical agents, including acids, bases, and oxidizing agents. Unfortunately, there has been limited research into the chemical resistance of various types of microplastics to these substances. To address this issue, a study was conducted to examine the chemical resistance of four species of microplastics (high-density polyethylene, low-density polyethylene, polystyrene, and polyethylene terephthalate) to hydrogen peroxide, potassium hydroxide, sodium hydroxide, nitric acid, and acetic acid. The study assessed the percentage degradation and physical damage of microplastics using a microscope. The results indicated that acidic and alkaline substances were the most destructive to microplastics, while oxidative reagents resulted in fewer changes to plastic properties. These findings provide valuable insights into the properties of MPs and their response to strong acids, bases, and oxidizing agents, which can serve as a reference for future studies on MP pretreatment. In addition, used as a guideline to update current protocols and ensure that microplastics can be treated without causing damage.