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The distribution of the ^{129}I radioisotope concentration in surface waters across Romania

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The increasingly wide range of human activities in the nuclear field, such as nuclear weapons technologies, nuclear reactors for energy production, spent nuclear fuel reprocessing plants, and nuclear waste repositories, has correspondingly increased the importance of monitoring and preventing nuclear pollution.

In the early stages of nuclear pollution, the quantities of dispersed radioactive material in the environment can be extremely small, undetectable by most nuclear monitoring techniques. The accelerator mass spectrometry technique using ^{129}I is suitable for detecting very small increases in nuclear pollution even in the early stages when they are not yet hazardous in terms of contamination level.

In this research, we continue our work of determining ^{129}I concentrations by analyzing water samples collected from across the entire territory of Romania. The aim is to map the current level of ^{129}I concentration in order to assess the potential impact of future nuclear contaminations at the Romanian and Southeast European levels. The results obtained will complete the global map of ^{129}I distribution created by Xuegao Chen et al. in 2015, where there is currently a lack of data concerning Romania.

Student Submission

Yes

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