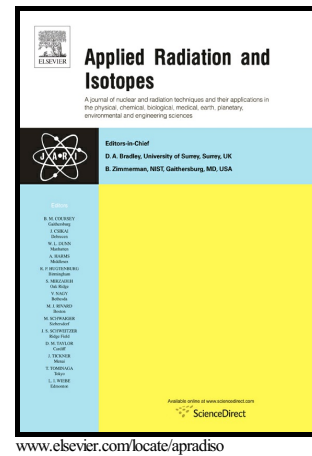


# Author's Accepted Manuscript

Determination of  $^{210}\text{Pb}$ ,  $^{210}\text{Po}$ ,  $^{226}\text{Ra}$ ,  $^{228}\text{Ra}$  and uranium isotopes in drinking water in order to comply with the requirements of the EU 'Drinking Water Directive'

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Determination of  $^{210}\text{Pb}$ ,  $^{210}\text{Po}$ ,  $^{226}\text{Ra}$ ,  $^{228}\text{Ra}$  and uranium isotopes in drinking water in order to comply with the requirements of the EU 'Drinking Water Directive'

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Abstract

The European Union published in 2013 a new Drinking Water Directive with stricter requirements for measuring natural radioactivity. In order to adhere to this, a method for sequential separation of  $^{210}\text{Pb}$ ,  $^{210}\text{Po}$ ,  $^{238}\text{U}$  and  $^{234}\text{U}$  in drinking water was applied using UTEVA<sup>®</sup> and Sr resins. Polonium-210,  $^{238}\text{U}$  and  $^{234}\text{U}$  were quantified using alpha-particle spectrometry and  $^{210}\text{Pb}$  using liquid scintillation counting. Radium-226 and  $^{228}\text{Ra}$  were determined using 3M Empore Radium RAD Disks, and their quantification was done using a Quantulus<sup>™</sup> 1220 liquid scintillation counter.

Keywords: drinking water directive, natural radioactivity,  $^{210}\text{Pb}$ ,  $^{210}\text{Po}$ ,  $^{226}\text{Ra}$ , uranium isotopes

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