

Title	Intercomparison of Laboratory Analyses of Radionuclides in Environmental Samples
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Abstract	<p>Thirty-eight laboratories participated in an intercomparison exercise carried out in 2004 and 2005 on laboratory analyses of radionuclides in environmental samples and food. The sample types included seawater, lake water, tap water, sediment, seaweed, fish meal, soil, dry milk, cereal and lucerne and the exercise involved artificial and naturally occurring radionuclides including total alpha and beta radioactivity. The evaluation of analytical performance was based on comparison with median values, a 10% target standard deviation and statistical tests at the 99% level. More than half of the laboratories passed the evaluation criteria for ^{99}Tc, ^{134}Cs, ^{137}Cs, $^{239,240}\text{Pu}$, ^{226}Ra, ^{232}Th, ^{40}K, ^{210}Po, ^7Be and tritium while less than half of the participants passed the criteria for ^{90}Sr, ^{238}Pu, ^{241}Am, ^{210}Pb, total alpha and total beta radioactivity. The analytical results compare well across many of the laboratories. However, the results indicate that there is room for improvement of the analytical quality at most laboratories. It is also noteworthy that the results on total alpha and beta radioactivity in lake water show quite poor agreement, which is a matter of implication for national screening programmes of radioactivity in drinking water. It is important, to recognise the subjective components of the evaluation that include the choice of using median values to represent the true values and the choice of a target standard deviation of 10%. However, for one certified reference material included in the exercise, the median and the reference values were in good agreement.</p>
Key words	Radionuclides, intercomparison, environment, food