

Title: **Validation of a method to determine ^{55}Fe and ^{63}Ni in water samples using liquid scintillation counting.**

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1. SUMMARY

^{55}Fe and ^{63}Ni are two radioisotopes that are decisive in the management of low activity nuclear waste but, due to the low energy of their emissions, specific methods are necessary for their determination. In this work, we have optimized and validated a method to determine ^{55}Fe and ^{63}Ni in water samples. In this method a precipitation of hydroxides is carried out to concentrate the sample, a separation of the radioisotopes analyzed by means of anion exchange chromatography and a purification of the Ni fraction. Finally, the samples of ^{55}Fe and ^{63}Ni are analyzed by applying the technique of liquid scintillation. The recovery percentages obtained are 89.9 and 83.2% for ^{55}Fe and ^{63}Ni , respectively. The measurements show a bias between 5% according to the activity level of the samples. The detection limits calculated are 0.0190 Bq / L and 0.0059 Bq / L for ^{55}Fe and ^{63}Ni , respectively.

Keywords: ^{55}Fe , ^{63}Ni , radioactivity, liquid scintillation counting