

Title: **Analysis of ^{90}Sr in presence of ^{210}Pb in environmental samples with selective fluorescent polymers (PSresin).**

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Date: Juny 2019

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Strontium-90 is one of the radionuclides of major concern in every emergency and environmental control plan. It is produced as a result of the fission of uranium-235 and can be released to the environment in big amount when an accident occurs. Strontium-90 is a high energy beta emitting radionuclide, and it is also biocompatible, because of its similar physical properties to calcium. When strontium-90 is ingested it reaches to the bones and teeth, being accumulated in the humans being, producing as a result bone cancer.

On the recent years a new alternative method to determine strontium-90 has been developed. This alternative is PS resin, which consist of a plastic scintillator microsphere, with a crown ether immobilised on the surface that is selective for strontium. This strategy unifies the separation from interferences and the measurement, without producing mixed wastes.

Lead has similar chemical properties than strontium. For that reason, lead-210 is retained in the PS resin, acting as an interference when strontium-90 is measured, because of that, lead-210 is needed to be separated from strontium-90.

On the following study, three different strategies to separate lead from strontium have been studied:

- 1) Precipitating agents pre-treatment (chromate, oxalate, iodate and phosphate).
- 2) Lead elution.
- 3) Analysis of the spectrum windows.

The results obtained showed that the best option was a pre-treatment combined with a counting windows delimited from 450 to 632. Lead is separated from strontium, with a pre-treatment that consist on a coprecipitation of lead and strontium with iodate and the dissolution of strontium with boiling water and then strontium is precipitated with di-ammonium hydrogen phosphates, with a strontium recovery of 70% with a total removal of lead.

Keyword: PS resin, Strontium-90, Lead-210, Extraction, Scintillation, Radioactivity