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**P60 VALIDATION OF URANIUM AND THORIUM DETERMINATION IN  
SEDIMENTS BY SPECTROPHOTOMETRY WITH ARSENAZO III**

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The evaluation of environmental contamination is one of the most important ways to check the anthropogenic interference. Human activities next to a water body, as mining, or on the waterbody, such as transportation ships, can pour unwanted wastes, increasing the concentration of metals or radionuclides. One way to evaluate this contamination on waterbodies is the quantification of radionuclides on sediments. The evaluation of uranium and thorium contamination is an important measurement of anthropogenic interference, because these two natural radionuclides can be found in many places on earth. There are many techniques to determine the uranium and thorium concentration in sediments samples, and the spectrophotometric method with Arsenazo III is one of the quicker and cheaper methods. The Arsenazo-III reacts with both radionuclides, producing a stable complex in low pH condition. The radionuclides were extracted from the sediments samples by an acid digestion, with HNO<sub>3</sub>, HF and H<sub>2</sub>O<sub>2</sub>, on a microwave. The interferences were removed by solvent extraction process, allowing the Arsenazo III to react only with the uranium and thorium. The validation process was performed to evaluate if the whole process could reach reliable results with expected quality level. The Limit of Detection (LOD), Limit of Quantification (LOQ), Accuracy (Z-Score) and Precision (Relative Standard Deviation) of each method were evaluated following the INMETRO's guidance document. The LOD and LOQ of the uranium determination are, respectively, 0.98 and 1.11 ppm, and for thorium determination are, 0.61 and 0.81 ppm, for the analysis of 0.5g of sediments samples. The methods validations were performed using the certified reference material (CRM) IAEA SL-1, for uranium determination, and IAEA SL-3, for thorium determination. Both validations reached satisfactory results of Accuracy and Precision for the analysis of 0.5g of sediments samples.

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