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In-Housing characterization of a working standard americium solution

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For many reasons the production and supply of nuclear certified reference materials is becoming increasingly difficult and expensive, some of these non-routine materials being utterly not commercially available at all. This lack of CRM may be critical for the capability of labs to support analysis.
For these reasons, many labs, especially in the field of nuclear community, are involved in this issue and have to develop and implement within the lab working standard to meet the requirements of a certified reference material, our lab developed recently a methodology to overcome this problem to limit the risk of significant systematic errors in measurement systems.
This presentation deals with the entire process to prepare and maintain an "in-house"or working standard from a legacy material that consists of a batch of americium oxide powder, used for the determination of Americium assay by ICP-OES.
That includes procedures to handle and weigh, methods to dissolve and dilute but also to assess the americium concentration value and its uncertainty by different analytical methodologies ; a focus is made on the determination using the Isotopic Dilution - Thermal ionization mass spectrometry (ID-TIMS) method.
All the results are processed with an ANOVA approach to ensure accurately the concentration of the prepared mother solution.
To extend this procedure to others samples that may contain plutonium, a specific chemical pretreatment must be carried out to separate americium from other actinides to avoid isobaric interferences. This partition procedure includes a multi stage column-based extraction chromatography system and will be described.

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