

## **Calibration Standards and Proficiency Testing Samples in Radioactivity Analysis**

Evgeny Taskaev

*Eckert & Ziegler Analytics, Inc., 1380 Seaboard Industrial Blvd., Atlanta, GA 30318*

Current regulatory environment (ISO 17025, MARLAP etc.) and good laboratory practices require Radioanalytical Laboratories to develop or select appropriate analytical method, verify, and validate it, and establish metrological traceability. All mentioned activities will require the use of Reference Materials (RM), Calibration Standards, Laboratory QC samples, sources for daily checks of the instruments etc. It also will require participation in Proficiency Testing (PT) program.

ISO standards 17034 and 17043 describe in generic terms requirements for Reference Material (RM) producers and implementation of PT program respectively. Laboratory input in transforming generic requirements to specific actions is critical. Defining traceability requirements and sources' metrological parameters can be especially challenging. Desire to develop emergency response capabilities, adds even more requirements to PT plans.

To address demand and reduce manufacturing costs of RM/PT, Eckert & Ziegler Analytics, Inc. (EZA) have started shifting from preparation of "traditional" RM/PT towards lab/project specific, highly commutable (fit for purpose) samples. This includes concept of whole sample use, where RM or PT sample will be used as "a whole" without subsampling or division.

It is essential that participating laboratory thoroughly evaluates their needs for RM/PT and gets involved in the design of the RM/PT samples and schemes, optimizing parameters and cost. After all it is the laboratory responsibility to design appropriate PT program that will satisfy regulatory and accreditation bodies and provide traceable results.

Some examples of specific calibration standards and PT samples in radioactivity analysis are discussed.