

Low Enriched Uranium Control Applicable to a Range of Potential Mo-99 Production Processes

A.S. Anderson, R. Copping, G.E. Dale, D.A. Dalmas, M.J. Gallegos, L.A. Hudston, C.T. Kelsey IV, I. May, M. Mocko, S.D. Reilly, D. Rios, F.P. Romero and K.A. Woloshun
Science, Technology and Engineering
Los Alamos National Laboratory, Los Alamos, NM 87545

ABSTRACT

The control of Low Enriched Uranium (LEU) is essential for a range of Mo-99 production processes. The accurate analysis of uranium concentration in solution has wide application and we have developed a simple analytical method that complements more time consuming uranium concentration measurements. Recently, we have refined this technique for the analysis of uranium in sulfate media in support of SHINE Medical Technologies™ measurement control requirements. The need for additional uranium control is also evident when considering LEU production of Mo-99 vs. High Enriched Uranium production, and the increase in uranium required for LEU production. As a potential solution we have developed a process for the removal of the excess uranium post-irradiation prior to the application of conventional technologies for Mo-99 purification. The different aspects of this work have been supported by the NNSA Global Threat Reduction Initiative and the Los Alamos Laboratory Directed Research programs respectively.