

UPDATE ON ORNL RADIOBIOASSAY PROGRAM;
SUB-SAMPLING OF URINE:
HOW GOOD IS GOOD ENOUGH?

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Routine urine radiobioassay analyses have been employed at the Oak Ridge National Laboratory (ORNL) to assess radiological workers' internal exposure. Typically, urine samples collected over a 24-hour period are analyzed in their entirety, i.e., samples are transferred to a glass beaker, emptied bottles are washed with nitric acid and DI water thoroughly to ensure complete transfer of the analyte. Frequently, however, only a portion of the entire sample is analyzed for some analytes; hence, subsamples need to be taken from the bulk of urine. For uranium analysis by ICP-MS, 25 g subsamples are taken while the urine is being mixed with a stir bar. When precipitation of organic matter or adsorption of the analyte onto the inside surface of the container happens, the results might be under/overestimated.

In this presentation, results of long term stability studies of Th, U, Pu, and Am in human urine will be discussed together with some recent experience at the ORNL Radiobioassay Laboratory.

¹ Managed by UT-Battelle, LLC for the U.S. Department of Energy under contract DE-AC05-00OR22725.