Distribution of Thorium and Other Trace Elements in Human Tissues

Samuel E. Glover, Ph.D.
Washington State University
(May1998)

Thorium from environmental intake has been determined in the tissues of a whole body donor to the United States Transuranium and Uranium Registries (Case 0212) using pre-concentration neutron activation analysis method developed for these analyses. This case had occupational exposure to plutonium and americium but no known occupational exposure to thorium. Distribution data for thorium from this work is compared to previous studies of natural and colloidal thorium in human tissues and to the distribution of plutonium and americium in these same tissues of this case. Three methods were developed and evaluated including: sulfate based electrodeposition of thorium and other actinides; tracer corrected, pre-concentration neutron activation analysis; and combined alpha spectrometry pre-concentration neutron activation analysis for determination of isotopic thorium. Select trace elements (e.g. cadmium, chromium, and zinc) were also determined in some of these same tissues by instrumental neutron activation analysis.

USTUR-0112-98