

Uranium Deposition and Retention in a Whole Body Donation to the USTUR

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This report characterizes the uranium content in the tissues of a whole body donated to the USTUR along with the implications for modeling and possible biological effects of uranium intake. USTUR case 1002 was an adult male who expired at a nursing home from an acute cerebellar infarct at the age of 83 y. He worked as a power operator, utility operator, and a metal operator for 28 years in a plant facility that processed and handled radioactive materials. During his employment, the highest single urinary uranium value measured was $\sim 30 \text{ mg L}^{-1}$ recorded in November 1949. The mean annual urinary uranium records covering the first eleven years of monitoring averaged less than 2 mg L^{-1} . The ratio of $^{234}\text{U}/^{238}\text{U}$ in the lung tissue was about 1, same as that found in natural uranium. The highest concentration of uranium was found in the tracheobronchial lymph node. In addition, the uranium content in the various tissues of the body followed a slightly different rank order than that reported by various authors in the literature. The concentration of uranium in the kidney tissue was $\sim 1.98 \text{ ng g}^{-1}$ which is about 3 orders of magnitude less than the generally accepted threshold level for permanent kidney damage of 3 mg U/g . Autopsy results disclosed findings not uncommon in the aged. Based on the data at hand, this worker incurred his uranium body burden from chronic long-term low-level inhalation of slightly soluble uranium in the workplace and suffered no apparent ill effects from his intake.

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