

The United States Transuranium and Uranium Registries: 1968-1993

R. L. Kathren

*United States Transuranium and Uranium Registries Washington State University, 2710
University Dr., Richland, WA 99352, USA*

The historical development and scientific contributions of the United States Transuranium and Uranium Registries are briefly traced. Further to encourage radiobiology studies and to provide unique materials for research in other areas such as biomarkers including oncogenes, the Registries have established the National Human Radiobiology Tissue Repository, which includes more than 20,000 tissue samples and solutions, histopathology slides, and related materials from persons with internal depositions, including radium dial painters, available to other investigators for collaborative or individual research purposes. Emphasis is given to recent findings of the Registries with respect to biokinetic models for the actinides and the post-mortem analysis of USTUR Case 0246, and individual who suffered a massive intake of ^{241}Am eleven years prior to death from heart disease. Registries studies show that in addition to skeleton and liver, muscle is an appreciable reservoir for both plutonium and americium. The systemic biokinetics of plutonium and americium are well presented by a three-compartment model that includes skeleton, liver, and muscle, although the biokinetic parameters of these two transuranium elements differ significantly. Initial uptake fractions for plutonium are 0.4, and 0.2, with residence half times of 50, 20 and 10 years, respectively, for skeleton, liver and muscle. For americium, the comparable uptake fractions are 0.45, 0.25, 0.3 with residence half times of 50, 2.5 and 10 years for the three compartments.

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