

Soft Tissue Concentrations of Plutonium and Americium in Occupationally-exposed Humans

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Human tissues, obtained at autopsy from 82 volunteer donors with a history of occupational exposure, were analyzed for ^{238}Pu , $^{239+240}\text{Pu}$, and ^{241}Am by chemical separation and subsequent alpha spectrometry. Concentrations of these actinide nuclides in soft tissues (testes, thyroid gland, spleen, kidneys, heart, and skeletal muscle) were compared to those of the livers in the same subjects. Tissue:liver concentration ratios were essentially constant over a wide range of liver concentrations. The spleen had consistently high actinide concentrations relative to liver; however, the heart had the greatest concentration ratio for ^{241}Am . Testes had relatively high concentration ratios of the plutonium nuclides but low concentrations of ^{241}Am . Skeletal muscle had low concentrations of plutonium relative to liver but high concentrations of ^{241}Am . In the tissues studied, concentration ratios of ^{241}Am were greater than those of the plutonium nuclides, most likely a result of more rapid excretion of that nuclide than the plutonium nuclides by the liver.

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