

Elemental Bio-imaging of Actinides and Beryllium in Lymph Nodes of Former Nuclear Workers

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The U.S. Transuranium & Uranium Registries (USTUR) studies the uptake, translocation and biokinetics of actinides in humans. This study explored the application of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) to elemental bio-imaging (EBI) of actinides [thorium (Th), uranium (U), plutonium (Pu), americium (Am)] and beryllium (Be) in samples of human tissue. The tissue samples were from occupationally exposed 'nuclear weapons site' workers, who had voluntarily donated their tissues to the USTUR. For this exploratory study, single sections of thoracic (respiratory tract) lymph nodes were mapped for actinide isotopes and ⁹Be.

The aim of this work was to develop LA-ICP-MS protocols for elemental bio-imaging (elemental distribution) of actinides and beryllium isotopes in soft tissue samples from occupationally exposed individuals.

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