

High Exposure to Americium: A Review of Hanford Accident Case

G.E. Dagle, R.E. Filipy, R.L. Kathren*, and J.J. Russell

United States Transuranium and Uranium Registries, *College of Pharmacy, Washington State University, 2710 University Drive, Richland, Washington 99352

The United States Transuranium and Uranium Registries (USTUR) Case #246 was a 64 year old chemical worker who was exposed to ^{241}Am during a glove box explosion. The chemical explosion of the glove box showered him with glass shards, nitric acid, and gram quantities of ^{241}Am . The worker had extensive chelation therapy with DTPA for 4 years following exposure. Clinical effects related to ^{241}Am exposure were limited to hematologic changes, including lymphopenia and thrombopenia. Cataracts were removed and corneal abrasions were observed, but these following exposure, at age 76, from complications of pre-existing cardiovascular disease. At the time of his death there was 540 KBq in his tissues; 90% in his skeleton, 5.1% in the liver, and 3.4% in muscle and fat. Significant findings at autopsy including acellularity of the bone marrow marked peritrabecular fibrosis in bone, and a lack of bone surface remodeling, confirmed by bone surface alpha-spectrometry. Cumulative absorbed doses to the bone, bone surfaces, liver, and lung were 18, 520, 8, and 1.6 Gy, respectively. Contrary to high expectations of fatal cancers, none developed.

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