Since 1968, the U.S. Transuranium and Uranium Registries (USTUR) has followed up occupationally-exposed individuals (volunteer tissue donors) by studying biokinetic and dosimetry of actinide elements. The USTUR currently holds data and tissue samples from six whole- and 27 partial-body donors with occupational uranium intakes. In this study, uranium tissue concentrations, body distribution, and biokinetics were compared between a group of individuals with occupational exposure to uranium and a group with chronic environmental-only intakes. Of two occupationally-exposed individuals, one had chronic inhalation intake of uranium oxide with natural composition, and another had acute inhalation of slightly enriched uranium hexafluoride. For all five individuals, the skeleton was a major deposition site where 51 ± 20% of systemic uranium was retained at the time of death. Average concentration in the skeleton was 4.0 ± 0.5 µg kg⁻¹ for all individuals except the uranium hexafluoride case, where concentration in the skeleton was two times higher. Uranium was well-distributed among soft tissues with concentrations mostly clustered about 1 µg kg⁻¹, except the uranium hexafluoride case, where median concentration was three times lower. For the uranium hexafluoride case, ²³⁵U/²³⁸U atom ratio analysis 65 years post-intake indicated that 95% of uranium in the lungs originated from accidental inhalation. This fraction was estimated to be 40% for the brain, 26% for the liver, 21% for the skeleton, and 7% for the kidneys.