DOE's U.S. Transuranium & Uranium Registries: Reaping the Benefits of Lifetime Follow-up of Plutonium-Worker Health and Tissue Dose

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The mission of the USTUR is to study the uptake, translocation and retention (biokinetics) and tissue dosimetry of uranium, plutonium, americium, and other actinides in occupationally exposed humans (workers), over their whole lifetime (from exposure through full lifespan), and to serve as a national and international resource for testing and improving the application of excreta monitoring and other contemporary bioassay data to predict tissue dose rates measured at autopsy. These studies are fundamental to evaluating and improving the reliability of, and confidence in, both prospective and retrospective assessments of tissue doses and risks from intakes of actinide materials through inhalation, ingestion, or contaminated wounds.

The workers who volunteered (and continue to volunteer) to register were mostly employed at weapons sites. They received substantial accidental intakes of plutonium, americium and/or uranium (since as far back as the Manhattan Project). For workers exposed to these materials, USTUR and the associated National Human Tissue Repository (NHRTR) remain the globally-unique resource (originators and custodians) of human tissue autopsy data and preserved tissues – linked to individual-specific health physics monitoring data and health records. To date, USTUR is the custodian of tissue radioanalysis data (and preserved tissue samples) from 323 donors – including 34 whole-body donors. A further 105 workers (both retired and current) have registered as potential tissue donors (including 15 potential whole-body donors), or as participants in special bioassay studies. This presentation will illustrate the spectrum of practical applications of current and planned USTUR research.

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