The United States Transuranium and Uranium Registries (USTUR): a unique human data resource

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A Human Tissue Research Program

The United States Transuranium and Uranium Registries (USTUR):

- Is a federally-funded human tissue research program.
- Studies plutonium, americium, and uranium (actinides) deposited within the human body – in former nuclear workers who had measurable, documented exposures to those elements.
- Performs complete autopsies on each of its volunteer registrants.
- Radiochemically analyzes post-mortem tissue samples for actinide elements.
- Provides long-term follow-up of actinide biokinetics, and potential health effects in nuclear workers with accidental internal depositions of these elements.

Since the USTUR's establishment in 1968:

- ✓ **39** Whole-body donations.
- ✓ **292** Partial-body donations.
- ✓ **12** whole- and **59** partial-body potential donors are still living.

8,000+ frozen or formalin-fixed tissues.

~10,000 acid-digested tissues, previously analyzed for actinides and available as acid solutions for future research.

The NHRTR: A Resource for Researchers

The National Human Radiobiological Tissue Repository (NHRTR) houses several tissue sample collections. Materials from these collections are available for collaborative research.

- **USTUR Registrants:** Thousands of frozen, formalin-fixed, ashed, and acid-dissolved bone and soft tissue samples are available. Most registrants were former nuclear workers; however, three were medically exposed to thorium via the contrast agent, Thorotrast.

Hygienically packaged frozen tissues

Thorotrast bottle

- **Radium Dial Painters:** women who ingested radium in the early 1900s while painting watch dials and military instruments with radioluminescent paint that contained radium. The radium dial painter collection consists of dried, ashed, and plastic embedded bones; frozen tissues; and data from the women who worked in the radium industry.

Cans of ashed radium dial painter bones and a watch dial.

Goals

- Evaluate and improve biokinetic models.
- Model the effects of chelating agents (e.g. DTPA, EDTA) on long-term tissue retention and urinary excretion of actinides.
- Establish national data bank.
- Compare pre-mortem estimates with tissue analysis.
- Assess radiation protection standards.

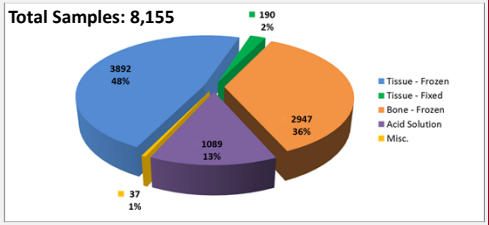
Health Physics Data: Making Connections

The USTUR has detailed work history, radiation exposure, medical and industrial hygiene records from each USTUR registrant's worksite. When these data are combined with autopsy and radiochemistry results, they form a powerful dataset that allows scientists to follow an individual worker from the initial exposure through his/her entire lifespan.

Available Tissues

From 5 to 250 tissue samples from each donation have been radiochemically analyzed to determine the actinide concentration in each organ. Frozen tissue specimens and acid solutions are available from a variety of tissues/organs, including:

- ✓ Brain
- ✓ Hair
- ✓ Kidneys
- ✓ Liver
- ✓ Lung
- ✓ Lymph Nodes
- ✓ Skeleton
- ✓ Skin
- ✓ Thyroid
- ✓ More…



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