USTUR NEWSLETTER

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DIRECT FROM THE DIRECTOR

It is my pleasure to have this opportunity to provide updates on the USTUR research and operations in 2014. In the 2013 Newsletter, I happily stated that we had two radiochemists on board. I was full of "redoubled optimism", but a change in USTUR personnel occurred in December 2013 with the retirement of our senior radiochemist. However, we managed to keep radiochemistry operations running with minimal detriment. This year, I am excited to welcome Dr. George Tabatadze as a new member of our radiochemistry team. Thus, once again, I feel redoubled optimism about our radiochemistry.

We successfully renewed our DOE grant to manage and operate the Registries through March 31, 2015. The USTUR funding remains 'flat' at $900,000. In addition, the USTUR research team obtained external funding of $50,000. These extra resources bring a sense of stability to the Registries in 2014.

The Registries has continued to collaborate with scientists nationally and internationally. We work closely with a team of US and international scientists to study the behavior of soluble plutonium material in the human lungs. This year, the USTUR team provided unique radiochemical results on plutonium distribution in lung tissues, which were used by a team of British scientists to estimate the fraction of bound plutonium in the lung. These results will be implemented by the International Commission on Radiological Protection to improve the current lung model. The new model will be used worldwide in radiation dose assessment for better protection of nuclear workers. This would have not been possible without generous contributions from our Registrants.

The USTUR 2014 scientific and operational achievements were highly rated by the Scientific Advisory Committee in the annual program review.

At the USTUR, we extend our greatest appreciation to those Registrants and their families, who have made the ultimate donation to the program, and to those Registrants who have remained with the program for many years. Thank you all.

~ Sergei Tolmachev

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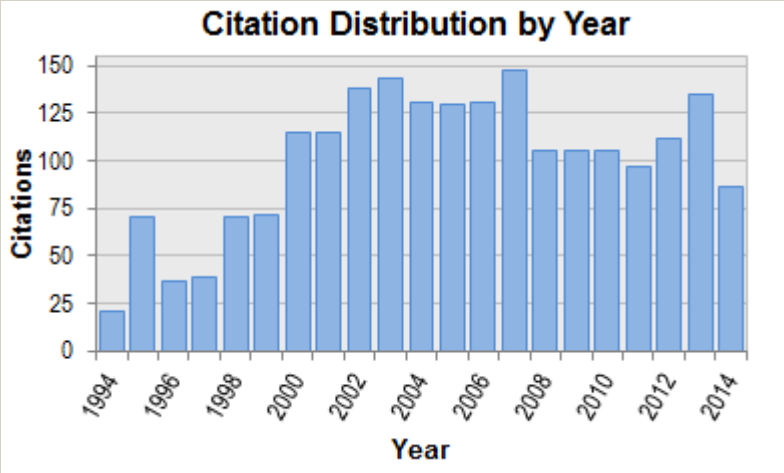
IMPACTING SCIENCE: USTUR PUBLICATIONS WIDELY CITED

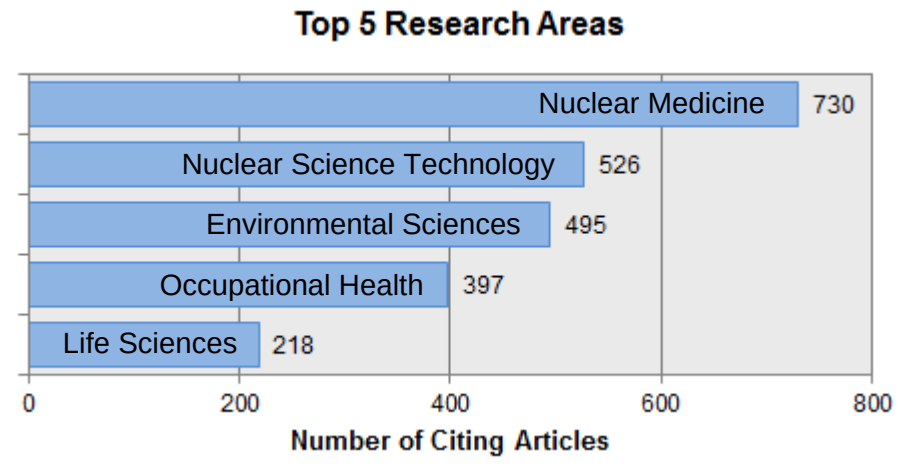


Late last year the USTUR's director asked an interesting question: how many times have other scientists cited the USTUR's research? This is an important question because the frequency with which the USTUR's publications are cited is a key indicator of the impact that the Registries is having on the world of science, and, consequently, on today's nuclear workers. The Registries has 272 publications in scientific journals and conference proceedings, and citation information could be found for 177 publications. Since 1980, these 177 articles have been cited 2,259 times. This means that USTUR publications are on average cited 66 times per year. That is quite an impact! The USTUR could not have done this without the generosity of our Registrants and their families. Thank you!

Want to learn more? Citation data was generated by the ResearcherID website. View a list of USTUR publications at: http://www.researcherid.com/rid/I-1056-2013

WHO IS CITING OUR ARTICLES?

ResearcherID also enables us to know in what fields of research our articles are cited. The top five research areas for publications where USTUR research has been cited are displayed on the right. Note that a single journal article may fall into multiple research areas, and, therefore, may be included in two or more of categories.



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HELPING FUTURE WORKERS THROUGH CURRENT RESEARCH

The USTUR is collaborating with scientists from the US, Russia, and the United Kingdom (the Mayak 2.4 project) to determine what fraction of inhaled plutonium is chemically "bound" to lung tissues for long periods of time. A larger fraction of "bound" plutonium would result in a higher dose to the worker, so this is an important question. The USTUR is measuring the amount of plutonium in different types of lung tissues from Registrant donations; the Mayak 2.4 research team will use these data to refine the mathematical model that describes the movement of plutonium through the lungs. Ultimately, the International Commission on Radiological Protection (ICRP) will incorporate these findings into their upcoming publication about occupational intakes of radionuclides. The ICRP's publications are internationally recognized as an authority on radiation protection, and its recommendations are used by professionals worldwide.

Through our collaboration with the Mayak 2.4 project, the USTUR's scientific staff were invited to attend one of their meetings, which was held locally in Richland. This was a valuable opportunity for the USTUR to work with, and learn more about, a program that is similar to our own.

MAYAK 2.4: WHAT IS IT?

The Mayak 2.4 project studies workers employed at the Mayak Production Association in Ozyorsk, Russia between 1948 and 1972.

COMPARE & CONTRAST

→ Both Mayak 2.4 and the USTUR study former nuclear workers.

→ Both analyze autopsied tissues for radionuclides such as plutonium.

→ Most USTUR donors were exposed to much smaller amounts of plutonium than typical plutonium workers at Mayak.

NEW FACES AT THE USTUR

This August, **George Tabatadze** began working as a research associate in radiation measurements. Dr. Tabatadze's Ph.D. research was conducted using data from a USTUR Registrant donation. As such, he is well-acquainted with the mission and operation of the Registries. He is enthusiastic about joining the USTUR research team, and we look forward to working with him.

Timothy Ledbetter (Tri-Cities Chaplaincy) has assumed the role of ethics advisor to the Scientific Advisory Committee. His experience as a hospital/hospice chaplain and representative on the Battelle/PNNL Institutional Review Board will benefit the USTUR and its Registrants as he offers advice on topics of ethical importance.

SCIENTIFIC ADVISORY COMMITTEE MEETING

Each year, the USTUR hosts a special meeting that allows the USTUR faculty to meet with our Scientific Advisory Committee and discuss the goals, achievements, and direction of USTUR research. The 2014 meeting was held in Richland, WA on September 5-6. Operational achievements and current research were presented. Featured topics included the distribution of uranium in humans due to environmental exposures, and testing of the National Council on Radiation Protection's recommendations for assessing intakes from radionuclide-contaminated wounds. Both studies used data from Registrant donations.

2014 SAC: Roger McClellan, Timothy Ledbetter, Robert Bistline, Richard Toohey, Herman Gibb, William Hayes.

A NOTE FROM OUR NEWEST SAC MEMBER

Being a community member of the USTUR advisory board is one of several hats that I wear in our greater Tri-Cities community. I also care for persons as a hospital and hospice chaplain for The Chaplaincy (a local agency that helps to ease suffering of those in medical and life crises). As a chaplain, I appreciate how important are gifts of body or tissue donation to the Registries. As you know, such foresighted gifts advance our knowledge about the effects of exposure to radiation. While society may not know much about this work, that does not diminish the value of your loved one's contributions.

I work with many persons and families in the frail and terminal stages of life and am very much aware it is often difficult to decide about matters related to the death of our bodies. In our western culture, such intentional conversations are frequently avoided. In light of this common reticence, I salute and commend your uncommon willingness to be intentional about donating. It is worth noting that in most religious and humanitarian traditions, one's sense of stewardship can be summarized by the phrase, "giving of one's time, talent, treasure…and tissue." This reinforces the Registries' deep gratitude and respect for the stewardship of your loved one's body that continues to benefit present and future workers, and society in general. Each donor contributes to a marvelous—albeit quiet—legacy! Thank you.

~ Tim Ledbetter

2014 SAC MEMBERS

Richard Toohey (chair) - *Health Physics*

Robert Bistline - *Occupational Health*

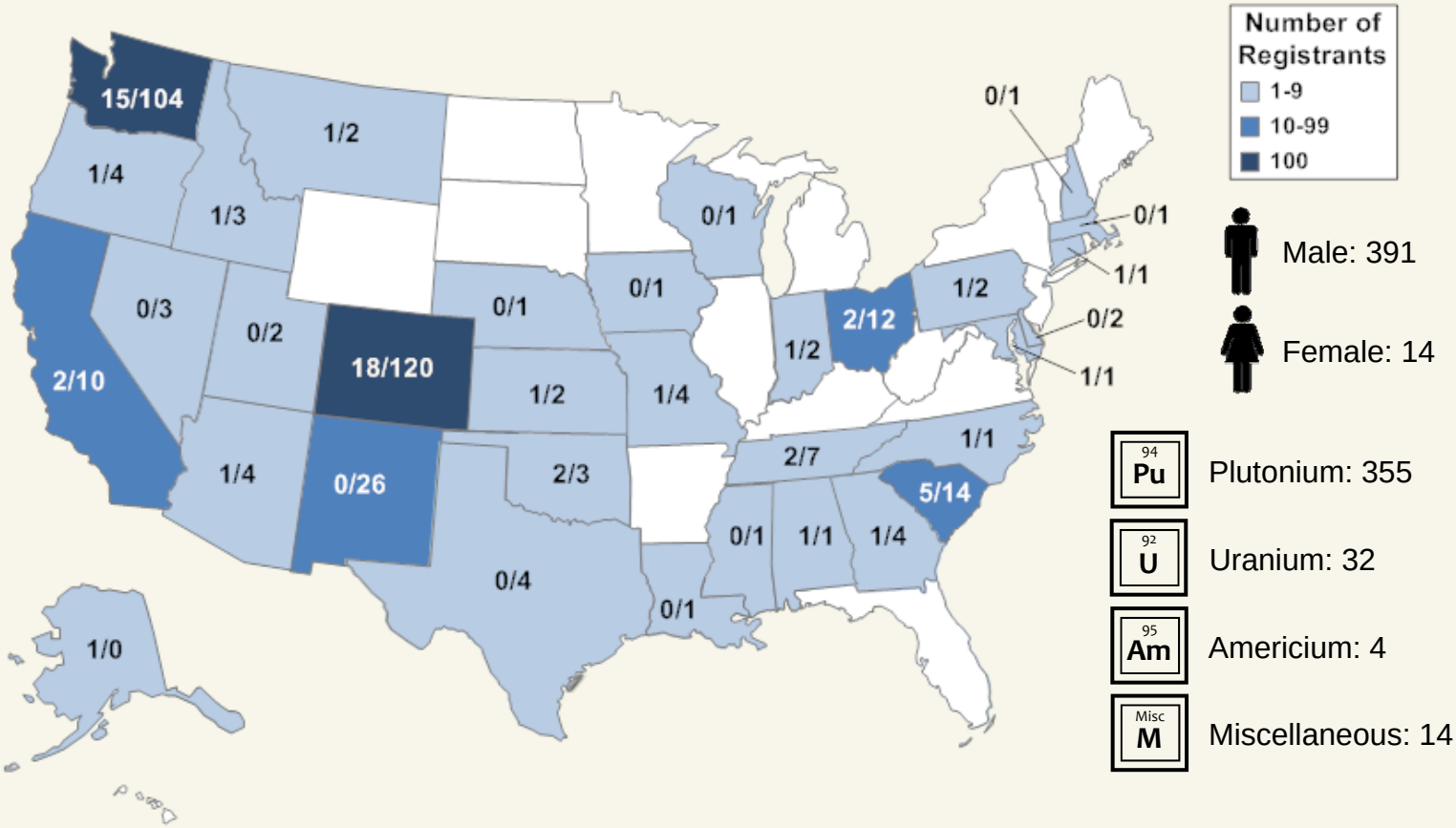
Herman Gibb - *Epidemiology*

William Hayes - *Radiochemistry*

Timothy Ledbetter - *Ethics*

Roger McClellan - *Toxicology*

REGISTRANT STATISTICS



The USTUR has **60 living** and **345 deceased** Registrants. On average, living Registrants are 79 years old (range: 43 to 90+), and deceased Registrants are 68 years old (range: 25 to 90+).The distribution of Registrants by US state is illustrated on the map. The first number for each state represents living Registrants, and the second represents deceased.

USTUR Registrants were exposed to a variety of radioactive elements such as americium, plutonium, uranium, thorium, and curium. Many were exposed to a combination of two or more of these during the course of their careers. When only primary intakes are considered, 355 Registrants were exposed to plutonium, 32 to uranium, 4 to americium, and 14 to other radioactive elements. Most Registrants received their intake(s) while working at Department of Energy (DOE) worksites such as Hanford; however, several of you worked in uranium mines/mills and a handful worked in private industry.

Back Row: George Tabatadze (USTUR), Danielle Gustin (WSU-Nursing), Margo Bedell-Parker (USTUR), Maia Avtandilashvili (USTUR), Stacey McComish (USTUR), Florencio Martinez (USTUR), Elizabeth Thomas (USTUR)
Front Row: Diana McGlynn (WSU-Nursing), Colette deVries (WSU-Nursing), Sergei Tolmachev (USTUR)

RENEWALS

Many thanks to those Registrants who signed renewal paperwork in the early months of 2014. I understand that there are several forms these days, and we appreciate your cooperation and dedication to the USTUR. As a reminder, Registrants are required to sign new permission forms every five years. Thirteen Registrants will be due for renewal in 2015. If you happen to be one of these Registrants, we will send the appropriate paperwork to you toward the beginning of the new year.

U.S. Transuranium and Uranium Registries
1845 Terminal Drive
Richland, WA 99354

Phone: **509-946-6870**
Toll Free: **800-375-9317**
Fax: **509-946-7972**

www.ustur.wsu.edu