Doctors using cesium-131 radiochemical brachytherapy "seeds," to treat prostate and other cancers. The Cesium-131 has a significantly shorter half-life than the two other isotopes commonly used for brachytherapy, allowing faster delivery of therapeutic radiation to the prostate gland, reduced incidence of common brachytherapy side effects, and lower probability of cancer cell survival.

Radioisotopes: The Medical Lifesavers That Congress Is Suppressing

by Christine Craig

Part I
U.S. Radioisotope Production and Use

The use of radioisotopes for the diagnosis and treatment of disease is now a vital part of modern medical practice. Aside from a few simple treat-

The cost of the U.S. policy restricting radioisotope production and use can be measured in human lives lost. Reviewed here is the history of

another radioisotope, iodine-232. Tucker and Greene developed the first molybdenum-99/technetium-99m generator, and Powell Richards, also of Brookhaven, fostered its development for medical purposes. But in 1966, the laboratory bowed out of production, leaving the playing field open to two private companies, Mallinckrodt and

Join the Campaign To Save the U-233!

In the Winter 2009/2010 issue, Christine Craig outlined the devastating lack of medical isotopes in the United States and the deliberate Congressional actions to bury the nuclear feedstocks (inappropriately termed "waste") that should be used to supply valuable isotopes.

This letter from a retired national laboratory official lays out a plan to save and use these nuclear materials, and urges readers to contact their representatives to get behind a plan to save the U-233 for isotope use. The author's white paper, "Save the U-233! But How?," can be accessed in the links he provides in footnote 3 below.

To the Editor:

Thank you for Christine Craig's story on the history of isotope suppression ("The Medical Lifesavers That Congress Is Suppressing," www.21stcenturysciencetech.com/Articles_2010/Winter_2009/Isotope_Suppression.pdf). She has done a good job of capturing the history of uranium-233 and its potential benefits.

I was partly responsible for what she called the "highly publicized plans to extract the Th-229 from the U-233 before disposal" at the Idaho National Laboratory. I also tried unsuccessfully to use a small sample of the U-233 at Oak Ridge National Laboratory to recover enough Th-229 to complete the Phase III clinical trial for acute myeloid leukemia at Memorial Sloan Kettering Cancer Center. Though neither effort was successful, there may still be time to detour the down-blend train.

Congress terminated the project once before because of skyrocketing costs. Congress has incentive to do it again. Costs are still spiraling out of control. The latest estimates I have seen are approaching half a billion dollars.[1]

As for safeguarding the U-233, the Department of Energy was instructed in March 1997 to come up with a plan to place the U-233 in safe, permanent storage. The current estimated completion date of the U-233 Down-blending Project is 2021[1]—or 24 years later. It would be interesting to know if these ongoing delays in providing safe storage of U-233 are acceptable to the current Defense Nuclear Facilities Safety Board.

DOE is doing what Congress has directed it to do. So, calls to DOE to save the U-233 fall on deaf ears. It is Congress that must act to terminate this down-blending project.

To that end, I have asked my senators and congressman to include the following language in the FY2011 Energy and Water Appropriations Bill for the Department of Energy:

"The Secretary of Energy shall direct that the Uranium-233 Material Down-blending and Disposition Project at Oak Ridge National Laboratory be terminated and that the uranium-233 be promptly transferred to safe, secure, interim storage at another DOE site."

The delegation is willing to listen.

This action would detour the current disposal path but not necessarily change the eventual down-blending. This approach has several advantages. First, it eliminates the urgency to do the down-blending at ORNL and the half-a-billion dollar price tag. Second, transfer to another DOE site places the U-233 in safe storage in a five-year time span, instead of ten years. Third, DOE can consider an alternative disposition path. Namely, they could consider chemical down-blending rather than isotopic down-blending, and still ship the material to the Nevada Test Site for safe, permanent storage.

The precedent for safe, permanent storage of chemically diluted U-233 was set with the U-233 from the Idaho National Laboratory. As part of the down-blending process, it would be possible for private industry to cover the incremental cost of recovering the thorium-229. With chemical down-blending, the U-233 would not be irretrievably lost. At the time the country decides it wants to pursue a thorium fuel cycle, the material would be recoverable.

Fourth, by promptly removing the U-233 from Building 3019, ORNL can begin investing in its central campus, and create jobs for the future, rather than continue with dead-end disposition jobs.

Last, but perhaps most importantly, the U-233 remains the responsibility of DOE's Office of Environmental Management. This is critical because no other DOE Office is willing or able to accept the long-term liability for this material.

Transfer of the U-233 to another site will not be trivial or cheap. However, DOE is familiar with, and budgets for, transport and storage of Special Nuclear Materials. Also, retrieval of the U-233 from storage is currently part of the disposition plan. So, DOE has a precedent to guide them and a sounder basis for estimating its cost. In addition, costs for transport should be incremental and only a fraction of the current down-blend estimate.

This action doesn't eliminate the cost for final disposition. It does, however, eliminate the urgency to do the down-blending at ORNL. In which case, DOE's Office of Enviromental Management can take the time to implement a more cost- and resource-conscious approach to final disposition. This should reduce the burden on annual Environmental Management budgets for disposal of this material.[2]

I have encouraged U-233 medical isotope and thorium energy advocates to contact their representatives—especially those on the House Energy and Water Appropriations Subcommittee—to support inclusion of this language.[3] Political support from these advocates will be crucial for any chance of success.

John R. Snyder, Ph.D.
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Notes

1. John Eschenberger, Assistant Manager for Environmental Management, DOE's Oak Ridge Office, in a presentation before the Energy, Technology and Environmental Business Association of Tennessee, April 29, 2010.
2. My arguments in support of this action are detailed in a white paper entitled "Save the U-233! But how?" which I included with my letter to Idaho Senator James Risch, requesting action on termination of the U-233 Project at ORNL.
3. Frank Munger's Atomic City Underground Blog, posted August 18, 2010: Campaign to Save the U-233 Stockpile, http://blogs.knoxnews.com/munger/2010/08/ campaign_to_save_the_u-233_sto.html and EnergyFromThorium website, posted August 18, 2010: "Help Dr. John Snyder save the U-233!" http://energyfromthorium.com/