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## **HOUSE, SENATE POISED TO TAKE ACTION ON MEDICAL ISOTOPE SHORTAGE**

—*Todd Jacobson*

With the world facing a potential shortage of medical isotopes due to the unplanned shutdown of a key Canadian nuclear reactor, House and Senate appropriators have increased funding for a National Nuclear Security Administration program that would help establish U.S.-based sources of isotope production from low-enriched uranium. In the version of the Fiscal Year 2010 Energy and Water Appropriations Act that was poised to be passed by the House last week, \$10 million was added to the NNSA's work under the Global Threat Reduction Initiative to create a reliable supply of Molybdenum-99, a critical medical isotope, without the use of proliferation-sensitive highly enriched uranium. The Senate's version of the bill includes \$20 million to address the issue. "With the Canadian reactor coming offline, it's our understanding it's never coming back," one Capitol Hill staffer told NW&M Monitor. "We now know there's a shortfall, there's a need for this, for this service, and it's not out there. The NNSA says we can move up a year or two, to accelerate the U.S. process and move to a LEU fuel, and to get this production back."

In the report accompanying the House Energy and Water bill, appropriators registered their concern and directed that the \$10 million for "activities to support the short-term production of critical isotopes in short supply, including Mo-99, be given the highest priority for this funding."

### **Shortage Already Having Impact**

Currently, no U.S. facilities produce Mo-99 and its daughter isotope, Technetium-99m, for use in nuclear medicine, though the workhorse isotope is used in approximately two-thirds of all diagnostic medical isotope procedures and Americans rely on the crucial treatments for approximately 16 million medical procedures annually. The U.S. has relied on international production of the isotope, but because Mo-99 has a short half-life, recent disruptions to the supply have already caused shortages and treatment delays, according to medical experts.

The key blow to the medical isotope industry came in May when the National Research Universal Reactor at Canada's Chalk River facility, which produces nearly one-third of the world's supply of Mo-99, was shut down unexpectedly because of a heavy water leak. Canadian officials announced

earlier this month that the reactor would be shut down for the rest of the year, and there is speculation that it might never be restarted. The world's supply of medical isotopes will currently be generated by backup producers in Europe and South Africa that produce medical isotopes from HEU. Facilities in Australia and Argentina produce medical isotopes from LEU, but they represent only 5 percent of the worldwide production of medical isotopes, according to Alan Kuperman, the director of the University of Texas' Nuclear Proliferation Prevention Program.

#### **U. Missouri, B&W Making Plans**

Two efforts are underway to establish a medical isotope production capability in the U.S. An existing reactor at the University of Missouri could begin producing medical isotopes from LEU by 2011 if the facility is licensed by the Nuclear Regulatory Commission, but funding is lacking for a processing facility. The additional funding from Congress would likely be targeted at aiding Missouri in ramping up its production capabilities, Capitol Hill staff said.

Additionally, a joint effort by Babcock & Wilcox and Covidien, a major supplier of medical isotopes to the U.S., is slated to begin production in 2014, though B&W Technical Services Group President Robert Cochran told NW&M Monitor earlier this year that the schedule could be accelerated by up to 18 months as long as the NRC licensing of the facility and other approvals move quickly. B&W is currently finalizing plans to build a production facility for the medical isotope line. B&W and Covidien are developing solution-based reactor technology that would produce medical isotopes without LEU targets, significantly limiting the amount of waste generated by current production methods.

#### **NNSA Increasing Focus on Medical Isotopes**

The crisis has drawn interest from more than just House and Senate appropriators. Rep. Ed Markey (D-Mass.) is drafting a bill that would authorize \$100 million over the next five years for an NNSA program to support and encourage the development of Mo-99 targets, fuel and processes from LEU. A senior-level interagency group met at the White House July 2 to discuss short-term and long-term supply options, and the NNSA is planning to accelerate its work to aid in the establishment of domestic sources of Mo-99. During a presentation at the National Academy of Science earlier this month, Parrish Staples, the director of the NNSA's Office of European and African Threat Reduction, said \$120 million would be needed to set up an LEU-based process for producing Mo-99. "The United States is at the nexus of two related priorities: discouraging the use of proliferation attractive HEU in civilian commerce and a health crisis from the lack of sufficient supplies of Mo-99," Staples said according to a copy of his presentation obtained by NW&M Monitor.

"The volatility of the current supply stream of Mo-99 and the issue of HEU in the civilian sector have drawn attention to the need for new producers to enter the Mo-99 supply chain." NNSA spokesman Damien LaVera said the agency is actively

working to address the issue. “NNSA is evaluating a broad technical spectrum of production methodologies that might ensure a secure, diverse, and reliable industry supply of Mo-99 without the use of HEU,” he said.

A group of 16 medical and nonproliferation experts that included Kuperman and Princeton professor Frank Von Hippel, the co-chair of the International Panel on Fissile Materials, last month urged Congress to address the shortfall of medical isotopes and the widespread use of bomb-grade HEU to produce existing stocks—what it called a “double crisis”—and Kuperman said it was gratifying to see action on the issue.

“The fact that DOE and both sides of Capitol Hill now support the initiative suggests that there is no longer a question of if, but merely when, the U.S. will start producing Mo-99 using LEU,” Kuperman said.

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