Efficient and Timely Production of Valuable Radioisotopes

Alexander DeVolpi, PhD
Nuclear Applications Company, 1371 Corte Paguera, Oceanside, CA 92057

ABSTRACT

Abundant and valuable Mo-99, tritium, He-3, and Pu-238 radioisotopes could be provided by a small liquid-fueled molten-salt reactor. This enterprising means would satisfy high-priority national and commercial production and nonproliferation goals consistent with global threat reduction. It would conform to Congressional legislation requiring domestic, affordable, and proliferation-resistant radioisotope supplies for medical use, as well as satisfying unfulfilled and increasing requirements for special radioisotopes having national-security applications. The single 10-100 MW(th) reactor, based on proven American technology, would fulfil domestic requirements. Optimized for enhanced radioisotope production, the reactor would likely have to be government prioritized and located on a government reservation, in part to conform with global threat-reduction goals. One small reactor would meet or exceed current national radioisotope requirements, with full cost-recovery, more likely a profit. It offers potential commercial product value of $billions/year, while reducing worldwide incentive and conditions for nuclear proliferation.