

The Use of Highly Enriched Uranium for the Production of Medical Isotopes



The American Nuclear Society is committed to the peaceful utilization of nuclear technology that is compatible with global nonproliferation goals, as embodied in the Treaty on the Non-Proliferation of Nuclear Weapons (NPT),¹ including minimizing the use of high-enriched uranium (HEU) in civilian commerce. Important medical isotopes have been derived from HEU to treat and diagnose illnesses such as heart disease and cancer.² The United States is the largest worldwide consumer of such isotopes, with more than 17 million procedures annually (40,000–50,000 procedures per day) that utilize these medical isotopes.³

Efforts toward the elimination of civilian utilization of HEU in medical isotope production are progressing. The majority of global isotope producers have converted to the use of low-enriched uranium (LEU, defined as uranium with less than 20 weight percent uranium-235).⁴ The U.S. industry continues to advance its full-scale domestic production capabilities to meet domestic medical isotope needs using non-HEU technologies that have been developed and demonstrated.

Therefore, the American Nuclear Society

- believes that government and private partnerships are essential toward achieving the goal of developing and deploying civilian non-HEU medical isotope production technologies to meet domestic medical needs, and

- endorses further research and development of options to eliminate civilian utilization of HEU in medical isotope production and supports prompt transition to these alternatives, when feasible.

References

1. International Atomic Energy Agency. “Treaty on the Non-Proliferation of Nuclear Weapons (NPT).” <https://www.iaea.org/publications/documents/treaties/npt> (current as of Jan. 25, 2022).
2. National Academies of Sciences, Engineering, and Medicine. *Molybdenum-99 for Medical Imaging*. Washington, D.C.: The National Academies Press. 2016. <https://doi.org/10.17226/23563>.
3. National Academies of Sciences, Engineering, and Medicine. *Opportunities and Approaches for Supplying Molybdenum-99 and Associated Medical Isotopes to Global Markets: Proceedings of a Symposium*. Washington, D.C.: The National Academies Press. 2018. <https://doi.org/10.17226/24909>.
4. National Research Council. *Medical Isotope Production Without Highly Enriched Uranium*. Washington, D.C.: The National Academies Press. 2009. <https://www.nationalacademies.org/our-work/medical-isotope-production-without-highly-enriched-uranium> (current as of Jan. 25, 2022).