

Molybdenum-99 World Supply

François Couillard (CAMRT, Ottawa)

The risk of a global shortage of Mo-99 used in the production of Tc-99m generators is an issue of concern in the near to medium term, particularly for the community of nuclear medicine specialists and their patients. Technetium-99m is utilized in over 80% of nuclear medicine procedures- more than 30-40 million examinations worldwide yearly. This is the "bread and butter" of nuclear medicine. Production has relied until now on a small number of reactors and processing facilities in Europe, North America, South Africa and Australia. Ongoing reliable supply of this critical isotope has been challenged recently by the cessation of production of Mo-99 on the Canadian NRU reactor. As a result, there is no longer any large-scale producer in America. In this presentation, the author will describe the current global supply chain. He will also comment on the likely impact of innovative projects to produce this isotope. Some of these rely on cyclotrons to produce Tc-99m directly. Others utilize linear accelerators. Yet others are experimenting with Mo-99 produced from different nuclear reactions in research reactors.

Technical challenges are only some of the barriers to new entrants. As we will see, commercial and distribution issues are also non-trivial obstacles. The author will conclude by discussing the current view on future supply and demand scenarios. He will highlight the importance of the concept of "full cost recovery" to the long-term viability of the industry.

References:

1. NEA/SEN/HLGMR(2017). The Supply of Medical Radioisotopes- 2017 Medical Isotope Supply Review: 99Mo/99mTc Market Demand and Production Capacity Projection 2017-2022.
2. Canadian Multi-Stakeholder Working Group on Medical Isotopes (MSWG)(2015). A Pan-Canadian Report on the National Supply Chain of Medical Radioisotopes Specifically for Molybdenum-99 (99Mo) and Technetium-99m (99mTc).
3. OECD/NEA (2010). An Economic Study of the Molybdenum-99 Supply Chain.